

# CALCUTTA REVIEW.

No. CCVI.

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# THE CALCUTTA REVIEW.

*No. 206.—OCTOBER 1896.*

## ART. I.—THE GREAT RIVER OF TIBET: ITS COURSE FROM SOURCE TO OUT-FALL.

*(With two Original Maps).*

THE French scientific press has been lately exceedingly jubilant over the geographical results of the recent journey of Prince Henri d'Orléans from China to Assam. He started from Tonking in January 1895; crossed the province of Yunnan, and, achieving a new and perilous route, traversed the uppermost waters of the Irawadi river from N.-E. to S.-W., eventually reaching Sadiya in Assam on Christmas-day, 1895. Thereupon, with characteristic assumption and far-sounding cries of triumph, do his countrymen assert that a Frenchman has settled the long-vexed question of the sources of the chief river of Burmah, and finally determined that the Irawadi is not the continuation of the great water-artery of Tibet.

Such exultation seems rather quaint; because, hitherto, all French geographers have made it quite an affair of honour to maintain the precise opposite. Cumulative evidence of overwhelming force had been amassed during the last fifteen years by agents of the Survey of India, both English and Native, and by other British explorers, which substantially proved that the Tibetan river was the early course of the Brahmaputra and conclusively showed that it had no connection with the Irawadi. In France, nevertheless, the whole was hotly negatived. D'Anville, the earliest cartographer of these regions, a Frenchman, had made the Burmah river the development of the "Sanpo" of Tibet; to hold to that view was, consequently, a national matter.

It is amusing, therefore, to note how neatly and with what *savoir faire* the French geographical writers would now escape from their former untenable position. General Walker, Mr. J. B. Hennessey, Sir Henry Yule, and other English authorities had frequently demonstrated that the Irawadi rose in a range dividing North Burmah from Dza-yul, and that, on the contrary, the Salwin had its origin far within Central Tibet.

Unfortunately, however, General Walker had once issued a tentative map placing the source of one branch of the Irawadi in Tibet. On this the Frenchmen seize. Ignoring the consistent contention of all British geographers for years, they point derisively to General Walker's map, and announce Prince Henri's "discovery" as if it were a new idea just promulgated, proudly assenting to it as the solution of a mystery now for the first time unravelled by French enterprise.\*

Admittedly, the exploit of Prince Henri was an adventurous one ; and it might have been as geographically useful as it was spirited, had he brought back any minute technical record of his route, supplemented by laborious observations. A showy escapade is not, however, equivalent to a genuine exploration. As to the general topographical information obtained, it has nothing about it of the grand solution of a problem claimed for it by writers in the French press. Its real value is of a secondary nature ; in that it is confirmatory of previous explorations in nearly the same regions made by British survey officers, of which little public notice has been heretofore taken.

We may state shortly, for the present, that two expeditions into the Mishmi and Kampti territory, together with certain survey work on the upper waters of the Irawadi from the Burmese side, had already sufficiently established the general localities where the feeders of that river rise. In 1885 Colonel R. G. Woodthorpe, Major C. R. MacGregor, Mr. M. J. Ogle, and Dr. St. John Grant investigated the country bordering the western sources, a large portion of which was accurately mapped. Again, in 1891, the Irawadi was ascended above the point where the two main feeders coalesce ; the explorers being Colonel Hobday, with Lieuts. Elliot and Daly. The results of these journeys, combined with previous scrutinies from the Chinese side in Yunnan, proved the river of Burmah to have no share in the drainage of Tibet, and placed the main water supply in the glaciers of a mountain range running N.-E. to S.-W., dipping from latitude  $28^{\circ} 25' \text{N.}$  to  $28^{\circ} 5' \text{N.}$

Accordingly, now that the long-held opinions of British geographers upon this subject have become universally acknowledged facts, and that the plucky excursion of Prince Henri d'Orléans has afforded our Gallican protestors an honourable entrance to the general view, a most interesting and necessary task remains to be undertaken.

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\* See also a paper by the present writer in the *Calcutta Review* for April 1894, wherein (p. 336) the points of origin of the Irawadi and the Salwin are determined. With regard to the latter river, Prince Henri avers now that it is the continuation of "the Ur Chhu of Tibet." If so, what becomes of the mighty Gyāma Ngul Chhu? The truth is that the Ur Chhu is quite a minor affluent of the latter : it is the Gyāma Ngul Chhu which developes into the Salwin.



## PURPOSE IN PRESENT PAPER.

The great waterway of Tibet, which for nearly 1,300 miles makes strange progress through that unknown land, has, as we say, at length been admitted to be the parent stream of the mighty Brahmaputra of the Indian plains. Bit by bit, during the past 28 years, have portions of the secret course been elucidated by our trained native agents despatched into Tibet. But the information ascertained in this and other ways exists for the most part in piece-meal form only. What remains yet to be done, then, is to collect and amalgamate the scattered facts and to present them as a connected whole. This question of the Tibetan river, and whether it eventually developed into the Brahmaputra or the Irawadi, has proved one of the most romantic as well as one of the most important problems of modern geography. But the details of the course of this wonderful river are in themselves worth setting forth; and the mystery which in some measure still besets them, adds to the charm of elucidation. Moreover, as we believe we can here give not only a full summary of all that has been so far brought to light on the subject, but have also many new facts to add from native Tibetan sources, we venture to put on record the present account.

Nearly the whole length, from west to east, of southern Tibet is traversed by a remarkable valley, rarely deep, but chiefly progressing as a broad depression in the lofty table-land at the back of the Himalayas. This valley forms the bed of a leviathan watercourse, running eastwards for several hundred miles, and draining large tracts of mountainous country to the north and south of its margin. It is, indeed, the gigantic gutter of the southern half of Tibetan territory; for, into its vortex, all the lesser rivers find their way at length.

The important fluvial artery, to which we are referring, is that so long known to geographers as the "Sanpo;" and the discussion concerning its ultimate development to which we have already alluded, has added considerably to its notoriety. Strange, however, it seems that Englishmen should have been dwelling for several generations within 100 miles of points a personal inspection of which could at once have ended controversy; yet they were and are physically shut out from such visits. Indeed, the question as to which southern river receives the "Sanpo," has to this day been determined only by accumulative inference, not by actual observation. Still (1896) do a few savage tribes keep back Europeans from settling the problem with their own eyes. And yet now a railway station actually stands only fifteen miles from where the Tibetan river meets the Eastern Brahmaputra!



Quite apart from this discussion, the great river deserved special investigation. It is unique, as we shall see, in so many ways. To mention, in passing, but one such singularity: When flowing at the height of 13,700 feet above the level of the sea, it is a river habitually navigated by boats and made use of for the transit of merchandize. This can be alleged of no other water at such an altitude in the world.\*

#### THE RIVER'S NAME.

First, as to the correct designation. This, of course, is not "Sanpo." That name came to be used only because the word *tsangpo* is the general Tibetan term for any large river; *chhu*, another word in common use, meaning merely "water," and being generally applied to smaller rivers. In the different districts through which this the *Tsangpo par excellence* passes, it bears different appellations. During the first 200 miles it still carries its ancient title, *Támchhok Khábab*, i. e., "the down-flowing mouth of the best horse"—the *Támchhok* being a fabulous steed petrified in Lake Má-p'ang from the rocky mouth of which creature the river is supposed to gush forth. Lower down in its course we hear the name Ngári Tsangpo. Below Shigatse it acquires the style most commonly employed in the civilised districts, that of Yeru Tsangpo (really *Gyas-ru Gtsangpo*) "the river of the righthand banner;" and that denomination seems to be maintained throughout Central and East Tibet and until, in the Miri and Abar hills, it is yet again changed into that of Dihang, or Dihong.

#### SOURCE OF THE TSANGPO.†

Despite the legend which has suggested the name for the early course of the river, it certainly does not rise, as alleged, in Lake Má-p'ang. The real place of origin is situated some 20 miles S. E. of that Lake—approximately in longitude 82° 10' E. In fact the Yeru Tsangpo has its sources in a long narrow valley cradled in a remarkable manner between three separate ranges of mountains, each of which is literally loaded with glaciers.

Into this womb of the Ice Mothers which, conjointly, breed the mighty Brahmaputra, even Tibetans themselves have scarcely ventured. The only entrance seems to be at the S. E.

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\* A small steam launch is stated to ply on the waters of Lake Titicaca, on the dividing line between Bolivia and Peru, high up in the Cordilleras. But the altitude of this lake is 12,750 feet above sea level, a thousand feet lower than the Tsangpo in Ngari Khorsum and Dokt'ol, where there is a boat service for a length of 80 miles.

† For convenience this term can be employed, and in Tibet it is often loosely so designated. The Capuchin Missionaries, who were resident 150 years ago at Lhása, writing *circa* 1740, styled it, variously, *Tzhang-po*, *Tsang-ciu*, and *Tsanga*.



R U N G J O R.

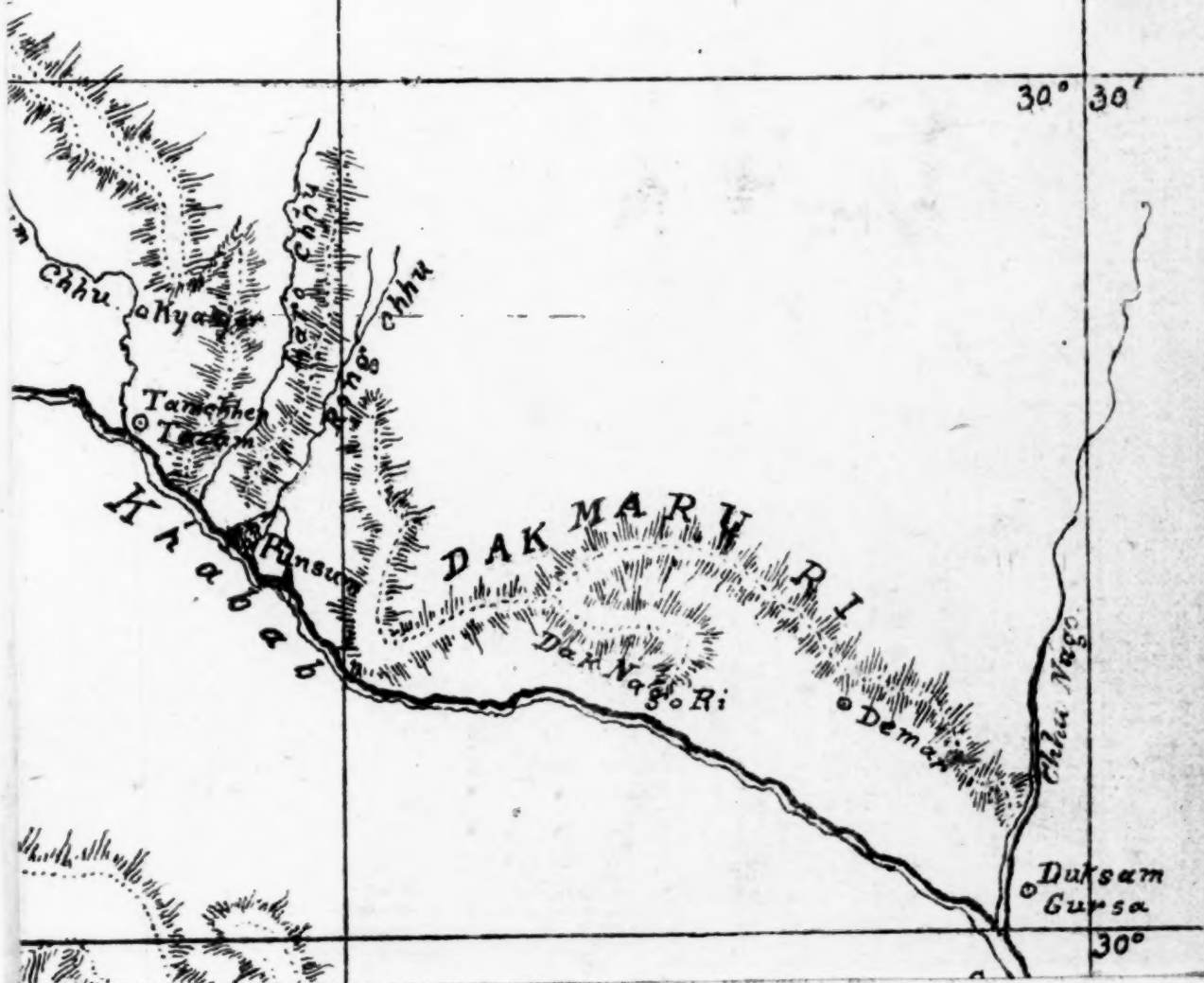
31°

YERU TSANGPO

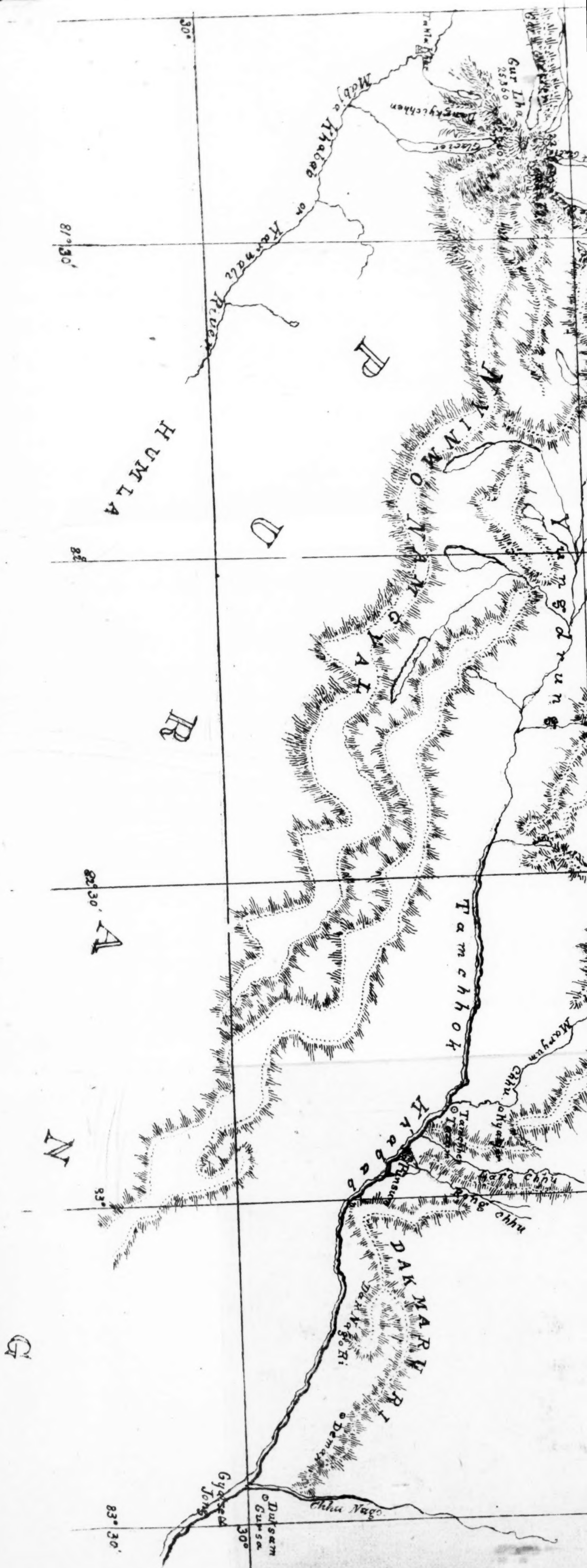
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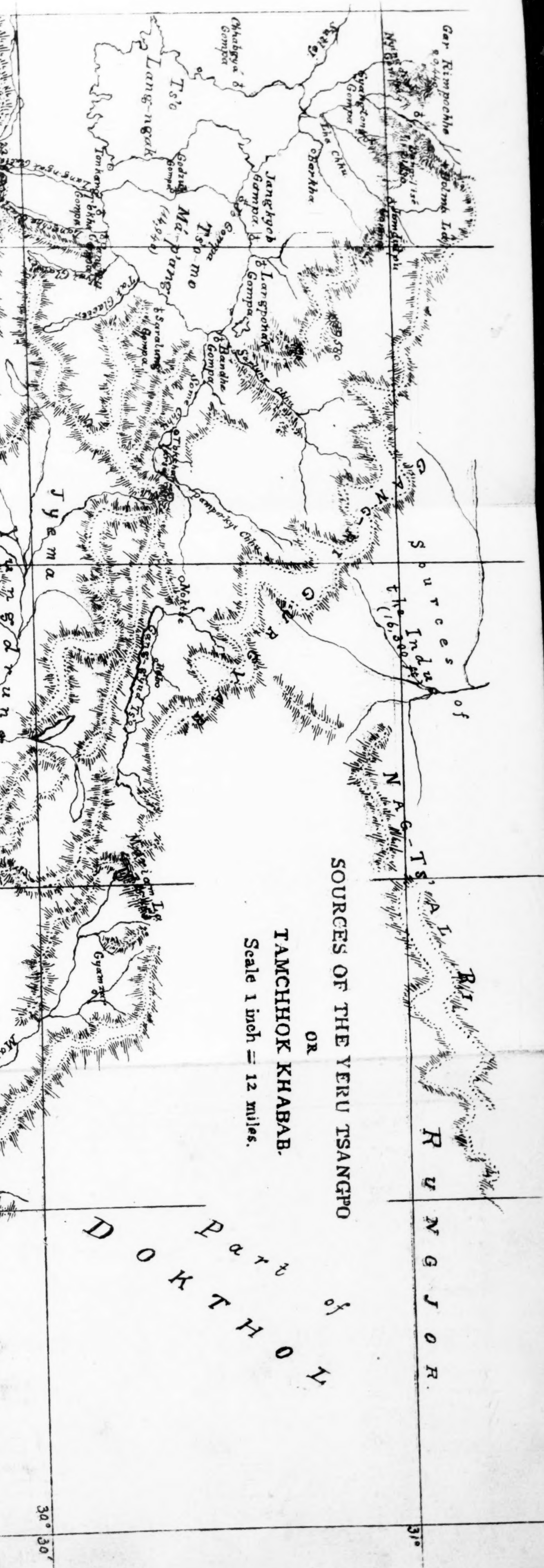
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SOURCES OF THE YERU TSANGPO

OR

TAMCHHOK KHABAB.

Scale 1 inch = 12 miles.

DOKPAT





extremity of this mountain-locked valley, at the end where the river issues forth. No tracks pass up the valley; for the mountains at the head of it, which separate the valley from the lakes at the base of Mount Kailas, have no way over them, and the whole terminates in a stupendous *cul-de-sac*. The actual place where the river first forms is said to be a large gravelly marsh, fed from the adjacent glaciers, and styled *Jyema Yungdrung*, "The Sands of the Mystic Wheel." This lies at an altitude of about 14,700 feet above the level of the plains of India, whither the waters are destined eventually to descend.

Lonely, impenetrable, unknown, it seems meet that the mystic and famous stream should thus be born in utter secrecy in this remote valley so far to the west.

But the solitude must be one not of barrenness, but of grandeur. On three sides, let us remember—N.-W., N.-E., S.-W.—, the birth-place is girt about by monster sentinels crowned with helmets of never melting snow, and standing shoulder to shoulder, with glaciers for each epaulette.

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SECTION : NO. I.

(*From the Source to conjunction with the Chhorta Tsangpo*).

"The Sands of the Mystic Wheel," whence the river takes rise, are closely hemmed in by parallel ranges trending south-eastwardly. The northern range, Gang-ri Gur-gyab, shuts off the sources of the Indus. The southern wall is a massive ridge radiating from Gur Lha, itself a stupendous mountain-matrix flung up to the south of Ts'o Má-p'ang (*i. e.*, "The Lake of the Peacock's Breast"). This ridge, bearing the name of Nyimo Namgyal, "that which completely vanquishes the sun," eventually makes to the S. S. E. to form the watershed lower down between the Tsangpo and the rivers of Nepal. The parallel ranges accompany the river for 25 miles, throwing up peaks from 18 to 22 thousand feet altitude and supplying it assiduously with glacial drainage. About 18 miles from the start, the valley opens out into a broad vale some 8 miles across; and there the river is found, with a swift current and deep waters, flowing in a rock-bound channel east by south. At this point it is said to be 70 feet in breadth. The southern bounding range here falls away south, though the glaciers and snowy peaks upon it continue, and have still to contribute two or three feeding streams. And now, when the cradling valley expands and the northern mountains drop lower, we find the first fixed geographical point. For, into the river basin, from within an elevated ravine, there creeps down along this northern wall a well-beaten



descent from the much-used Mariam, or Már Yum La. This, the "Mother of the Lowlands Pass," has two main approaches, or ascents, from outer regions which converge at its climax, or *laptse*, into the descent into the Támchhok valley. One approach is from the west, the direct official route from Gardok (Gart'ok) to Lhásá; the other road is from the north and north-west, and ascends from the valley of the Indus. The latter is the route from Leh *via* Rudok, and is a well-used line of transit from Ladak both to Nepal and to Lhásá. It is stated that merchandise can be brought up by the Indus to within ten miles of the foot of the northern ascent to Mariam La. Thence the goods are transported over the Pass into the Tsangpo valley; and it is said, are often again launched in hide boats some fifty miles lower down the stream, and so conveyed to Shigatse, which stands near the Tsangpo over 500 miles from Mariam La.

The descent from the Mariam La does not yet touch the great water-way. The combined route (comprising the two highways from Ladak to Lhásá) at first keeps laterally along the northern boundary of the valley, and is accompanied by a fairly large river formed by streams from the heights abutting the Mariam Pass. This path has to be traversed some thirty miles further before the merchants, packmen, and pilgrims come in sight of the mighty Támchhok (or Támchhen) Khabab travelling grandly eastwards. However, the banks are not actually gained until the post-stage named Támchhen Tázam has been reached; and there, too, the branch-river just mentioned falls into the main stream, which by this has travelled some fifty miles from its source.

A word may here be interposed concerning these halting stages on the post-track which forms such a feature along a great part of the course of the Tsangpo. They are termed Tázam or "horse-bridges," not because any bridge exists at them, but because the post-carriers to Lhásá there change their horses, and so the long and difficult route to that city is thus metaphorically "bridged" from Tázam to Tázam. At each of these stages is a large rest-house, where coolies and beasts of burden are always held in readiness, but only for official use.\*

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\* Between Gart'ok (near the Ládak border) and Lhásá, a distance of 790 miles, there are 22 *tázam*, and the special messengers of the Tibetan Government are expected to traverse the whole space in 22 days. Although the horses are changed at each stage, the messenger is not: he goes the entire distance, travelling night and day. These men are said to have their clothes stamped at the fastenings with official seals to ensure their not undressing while *en route*. When their garments are first taken off, after the 800 miles' ride, the rider is always in a terrible state of exhaustion. There are similar despatch services between Lhásá and Ba-tang, Lhásá and Peking and Lhásá and Phari Jong (near the Sikkim border).

From Támchhen Tázam down to the junction with the Chhorta river, a distance of 180 miles, the post-track follows the course of the Tsangpo ; and thus it was that the native surveyor, Nain Singh, was able to report fully on this portion. At first during that part the great river has the southern snowy range only from twelve to twenty miles distant, and it runs along the base of some low lying hills which form the northern bank. Beginning with dark shaly-slate, these hills soon pass into brown argillaceous clay, and eventually into actual red sandstone ; they give off several small feeders into the main river. The first large tributary falls in forty miles S. E. of Támchhen ; it comes in from the north, being styled the Chhu Nág-ku.

All this district is known as Purang ; and the Tsangpo flows near the chief town Yá-tse Dzong, with its great gompá of Shingp'el Ling. After the influx of the Chhu Nág-ku, the river continues S. E. until where, about fifty miles further on, it is augmented by another tributary, much larger than the first, arriving also from the north. This affluent, the Ts'á-chhu Tsangpo, seems to be almost as large as the Támchhen Khábáb itself, being 500 feet wide, and only to be crossed by means of ferry-boats.

On the transit being made, you approach the Tádum rest-houses, the largest set in that part of the country.\*

Tádum is a considerable vortex for trade, a fact to which the eight or nine post-houses surrounding the gompá bear witness ; routes to the Panjab and Nepal being brought in here. And now the river projects a peculiar loop, first due south, then curving north a little, but eventually making off once again direct to the S. E. Having absorbed another small tributary, the Mingchu Tsangpo, or "River of Ten Names," it takes a great bend some thirty-three miles below Tádum, flowing southwards for nearly twenty-seven miles, and afterwards turning up N. E. At the southern-most elbow there comes in the first important affluent received from the south. This is quaintly styled Shurtá Tsangpo, "the River of the Horse that Sits Still," while after a twenty-five mile run N. E., there unites with the now majestic stream a duplex tributary from the north, said to be the largest received during the whole course of the Brahmaputra through Tibet. In opposition to the last named contribution, this branch is known as the Chhortá Tsangpo, or "the River of the Horse that Runs Away"; and in size it fully equals the main water-way.

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\* Ordinary travellers use the stage-houses at a *tázam* on payment, but cannot claim ponies and yaks. Government officials travelling are provided with free transit of themselves and their effects, and invariably engage in extensive mercantile operations which have also to be given conveyance. Such conveyance becomes a heavy charge on the inhabitants of each district, who have to keep the *tázam* gratuitously supplied with beasts of burden.



So ends what we shall term the first section of the big river's course ; and it will be convenient to realise the position reached. By this time the number of miles traversed from the source may be reckoned with fair precision at 250. The progress throughout, with the exception of the loop just taken, has been S. E., and the longitudinal meridian arrived at is approximately  $85^{\circ}$  E. ; but the latitude has dropped from  $30^{\circ} 40'$  (at the source) to  $29^{\circ} 26'$  N. Although so many affluents have been absorbed, the apparent size is hardly commensurate to the quantity of water brought in by these. As in the parallel case of the Indus, it is depth and rolling force which have been gained ; and below Támchhen<sup>1</sup> Tá zam, the river is never fordable, even where it spreads most widely. Not counting the early feeders from the glaciers of the southern range, important as they are to the primeval formation, all the tributary streams, save one, have come in from the North. The Shurtá, just received, is of course noteworthy as being the first considerable southern tributary. It rises in a wonderful realm of glaciers on the Nepalese frontier at the roots of the Ngo La, or " Blue Pass," which leads over the southern bounding range so often alluded to. On the other side of the Pass we are amid the early fountains of one of the Gandak rivers of Nepal.

This southern bounding range (the Nyinmo Namgyal) is really of great consequence. Lying far to the back of the main line of monster Himalayan peaks, which line we have learnt long ago is not the actual watershed of Indo-Himalayan streams, it forms the true water parting between the Indian and Tibetan river-basins. And the fact, that, during a course of 190 miles or so—from where its drainage makes the nucleus of the Támchhok Khabab down to the Ngo La, where the Shurtá rises—no Tibetan river is given off from a range well-stocked as this is known to be with snow-peak and glacier, is of great interest. It shows how considerable must be the supply to the Indian rivers of the North-West, especially the Kosi and Gandaks ; for, after the Támchhok Khabab has left its flanks, the down-flow from the Tibeto-Indian watershed is almost exclusively Indian.

#### SECTION : No. 2.

*(From the Chhorta Tsangpo to Shigatse.)*

The rivers which debouch into the Támchhok from the north are all of such considerable volume that they must have had a lengthy run before reaching the point of junction. Accordingly we ought to set back the northern watershed of the Támchhok many miles further north than the actual valley line wherein the channel runs. The incoming northern



rivers cut through the low lines of hills bounding this valley on the northern banks: whence, then, do they hail? One would imagine that, in all probability, the massive mountain range, practically a continuation of Mount Kailas, known to geographers as the Gang-dis-ri range (really Gang Tise Ri) stretching east across Tibet, gave birth to these feeders. This range passes eastward from forty to seventy miles north of the general line of our river, and in the main forms the southern watershed of the great lake plateau. However, recent exploration shows that, in the case of several of the great northern feeders of the Támchhok, in the first and second sections, they rise further north still than the Gang-dis-ri range, even on the lake plateau itself. They pass through gorges between lofty peaks in this range, much as do the Indian rivers in their course though the Southern Himalayas. We interpolate these remarks here, because the Chhorta Tsangpo, which bounds our Second Section, is one of the great feeders, whose early course has been traced back north beyond the Gang-ri range; its primary sources being found in certain lakes to the S.-W. and S. of Dangra Yum Ts'o.

East of the Chhorta, the exact course of the Yeru Tsangpo (or Támchhok) has been traced for about thirty miles. Then for a length of, say, 150 miles, its line of progress is only conjectural. At that point the explorer, Nain Singh, left the river side, proceeding E. by N., while the river itself, as he observed, proceeded E. by S. Its course evidently takes the form of a shallow bow-like dip, first E. by S., then slowly slanting up again E. by N; for, near the important town of Jang Lhá-tse,  $2\frac{1}{2}$  degrees further east from where he had left it, and almost in the same latitude as at the point of his leaving it, Nain Singh again encountered the wonderful water-way. Of this unknown portion of the river, we have personally ascertained that it first passes over an extensive plain named La-wa Mon-t'ang. Here the channel cuts deep down, evidently through soft alluvial soil. It then enters the mountainous district of Jong-nga, where glacier-charged streams again feed it, as in its very early flow. During the whole of this course, the river seems to bear the name of Me'-tsang Chhu, or "Lower Tsang waters" by which name it is still known at Jang Lhá-tse.

Nain Singh beheld the river next again at Nupsi, fifteen miles above Jang Lhá-tse. This is classical ground to Tibetan Buddhists. Here, north of the river, are numerous large monasteries, notably Ngam-ring, a famous place of pilgrimage. Just before Jang Lhá-tse is reached, the river makes a sharp bend up northwards and then keeps N. N. E. for twenty-five miles. Jang Lha-tse is an ancient place

with many monasteries within and around its walls. Here, too, is one of the great iron-chain bridges erected across the Brahmaputra by T'ung-tong Gyalpo, 230 years ago. Just where the Ráka, or Rákpa Tsangpo, a mighty tributary from due west coalesces with it, the river resumes its old course of S. E. direction. In this neighbourhood stands the lofty chhorten built by the engineer-saint T'ung-tong, or T'anang; and just below the apex of the river bend is the town of P'ünts'o-ling, with its fort and the large monastery of the heretical Jonangpa School, built by the founder of the sect in the days of Kub-lai Khan. Here, and again a little lower down, are other iron-chain bridges. Four massive chains, with links a foot in diameter, run from pier to pier of masonry, thus spanning the wide deep bed of the river. A precarious footway of wood and rope is supported between the chains

From P'ünts'o-ling Jong, and, indeed, from Jang Lhát-se, there is a regular system of boat-traffic down to Shigatse, utilised for passengers as well as for goods and live-stock. Hide boats are the chief navigable craft. Midway between P'ünts'o-ling and Shigatse, the second great tributary, from the south—the Re or Shre Chhu—flows in. It is a considerable river. The port of call for Shigatse and Tashi-lhumpo is Tung-sum, about three miles from the former place, which lies off the main river. Two miles or so below Tung-sum is the mouth of the well-known Penam-nyang Chhu on the southern bank. This is the river upon which Shigatse actually stands; and its size may be estimated by the fact that at Shigatse it is spanned by a bridge said to be 380 feet in length. The Penam-nyang river drains the whole of these parts of southern Tibet that border on Sikkim and West Bhutan, and its own tributaries ramify through much of the mountainous district south of Lake Yamdok. But the Penam-nyang is itself only a tributary of the Yeru Tsangpo, which therefore embraces within its southern scope the whole of those border regions. Taking the territory abutting Nepal drained by the Re Chhu, we may estimate, within the basins of only two southern tributaries of the Tsangpo, an area of some 6,500 square miles.

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#### SECTION NO. 3.

##### *From Shigatse to Tset'ang.*

Down to the point where the Penam-nyang Chhu joins the Yeru Tsangpo, we may compute the distance traversed by the latter at 545 miles. By this time it has assumed the form of our larger Indian rivers. It runs in several channels separated by long bars of sand, and often spreads out into broad



shallow reaches at least two miles across. At the mouth of the tributary flowing past Shigatse, the river widens in this manner. It was exactly there that the Englishman, Samuel Turner, gazed upon those unknown waters from a rock above Tashi-lhümpo, in 1783. He notes that he beheld "the Brahmaputra" flowing "in a wide extended bed; and, as though the soil gave it an unwilling passage, it has forced itself through many channels and formed a multitude of islands in its way. But though its bed appears so wide extended from hence, I was told that its principal channel is narrow, deep and never fordable."

Leaving the mouth of the Penam-nyang, the river is bordered on the right bank by the Rong country, a district noted for its rocky defiles and gorges; on the left lies the district of Shang. Although bounding a district of ravines, so much of the right shore as lies adjacent to the river is an undulating fertile expanse, most carefully cultivated. Numerous valleys from the interior open out along this side, and these are neither wild nor rocky, but celebrated for their crops and general fruitfulness. Many villages lie along the track, which is never far from the river-side. At places the bank is so low that floods penetrate inland. On the left or northern bank runs a plain from three to five miles in width covered with much sand blown in from the bed of the river. Rounded hills, about 1,000 feet higher than the surrounding country, bound these plains to the north. About fifty miles from Shigatse, this range falls into the left bank of the river. Opposite this promontory, on the right bank, is the point to which the stream is navigable from Shigatse. The landing-place is styled *Tag-sa dru-kha*. Past this the river narrows and becomes too rough and shoaly for hide-boats. Also it here bends south, and, after a four miles run, a lofty offshoot from a mountain range to the south bears down to the river-side and stops, from this, the land-passage along the right bank. Along the base of the range, also, there comes in from the south-east a rapid river, the Rong Nag Chhu; wherefore up the left bank of this tributary the road leaves the Brahmaputra and makes for the shores of Yamdok Ts'o, wherein the Rong Nag Chhu rises.

Beyond the junction of the tributary from the south-east, the main river, for the space of eighty miles, as far as the famous Chaksam Chhuwori—the bridge near the mouth of the Lhasá river, is at present unreported upon. It enters a hilly country, and, it is said, falls over many rapids. But where it has next been touched by our explorers is one of the best known spots in its whole course. For there the great route from the west, *via* Shigatse, Gyangtse and Palte Jong, climbs up from Lake Yamdok over the Khamba La range, and descends from the

south into the Yeru Tsangpo valley, the name under which the Brahmaputra now travels. This route is the main one to Lhása; it passes over the Chaksam Chhuwori ferry (as the great iron-bridge is rarely usable), and up the valley of the Kyi Chhu to the sacred city.

Babu Sarat Chandra Dás, in his exploration report, thus describes the scene which breaks upon you as you descend from the Khambala Pass into this part of the Yeru valley:—

“The height we had reached was about a thousand feet above the level of the lake, though much higher than that above the level of the great river about to be seen. Passing the summit which faces the lake, we proceeded towards the *laptse*, the culminating point of the Pass. Here two large cairns stood on either side of the road, where my companions, taking off their hats, uttered mantras to invoke the mountain deities. . . . . Advancing a few paces beyond the sacred cairns, I came to a point whence I saw one of the grandest views in Tibet. It was that of the valley of the far-famed Tsangpo whose sublime scenery, the like of which I had never beheld before, quite ravished my heart. My enchanted mind was made full with impressions of the scenery, and I liked to enjoy it to satiety. The great Tsangpo flowed at the base of a gigantic yawning chasm, which extended for miles between two ranges of lofty dark mountains, whose flanks, overhanging the river from the north, were covered with dark forests of fir-like trees. At the foot of these lofty mountains, but still in uplands above the river-brink, there were pretty looking villages with castle-like white-washed houses, most of the larger houses being surrounded with tall trees. A village on the other side of the Tsangpo was conspicuous for the amazing depth in the valley at which it was seen from the *laptse* of Khamba La, being surrounded by rugged and sombre mountains.”

The road to Lhása from the Khamba La strikes the river some seven miles north of the foot of the Pass, the point of contact being a little to the west of the mouth of the Kyi Chhu, and this is where the chain-bridge and ferry already alluded to are located. Great reaches of sand lie there, but the waters are so broad that the violent wind, very prevalent in the Tsangpo valley, raises frequent storms which make the passage across dangerous. Across the river, on the western jaw of the open-mouthed Kyi, is the port of Chhu-shul, with a gomda and 108 chhortens on a hill hard by, all said to have been erected by the engineer-saint who constructed the various chain-bridges spanning the Yeru Tsangpo. From Chhu-shul there is a systematic service of large hide-boats down the main river, towards Tse-t'ang, the first stage, or half-way port, being the notable wool and cloth mart of Kyi-desho Jong, some



forty miles below Chhu-shul. In this course of the river, the current is very sluggish, the bed in places very wide, great expanses of sand intersecting the waters. The plain fringing the north bank in these parts is from two to five miles in width, full of villages and small convents, and bounded on the north by a range of low hills which eventually culminate in a fine peak 3,000 feet above the river-surface. This peak is nearly opposite Kyi-desho, and on its crags, an imposing spectacle, has been placed the great and ancient monastery of Dorje-t'ag—an establishment still belonging to the old Nyingma school of Buddhism, with a staff expert in Tantrik jugglery. At this point the river is described as flowing in one stream 800 yards broad, excessively deep from the contracted passage, and as teeming with fish. East of the T'ib Chhu, the southern affluent on which the cloth mart and port is built, the Yeru flows directly E. Here the enclosing valley is said to be grand and enchanting. In places it narrows into wild rock-walled gorges; elsewhere, and most frequently, it flattens out into great sandy reaches. Where wide and open, the lower spurs thrust out from the bounding hills, are covered with verdure and scaling trees; grain-crops and even fruit-trees, such as apricot, pear, and walnut, are made to flourish in every available spot. Large white-washed monasteries shine gleamingly in fantastic situations on the heights of the inner spurs; whilst many important hamlets and market-centres lie within easy access from this useful water highway. Twenty-four miles east of Kyi-desho, where the northern bank has degenerated into an extensive sandy plain, sloping up inland, the mighty monastery of Samye is reached. Its temples, with gold and copper canopies within a great walled enclosure, are prominent objects from the river.

Tse-t'ang, otherwise Che-t'ang, lies forty-two miles further east, where the Yarlung river disembogues its waters of the southern glaciers into the main-stream. And there terminates our third division of the great Tsangpo's course, after a stretch of 240 miles from Shigatse.

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SECTION: NO. 4.

*(From Tse-t'ang to Gyalla Seng-dong.)*

The large town of Tse-t'ang stands in long.  $91^{\circ} 43' 25''$  E., and from thence the river is seen trending away to the horizon in a wide valley in a direction about E. N. E. A great snow-capped range, coming up from the south, seems to meet the river in the far distance, and cut off further view. At Tse-t'ang low hills come close down both to the southern and the northern banks, and across the former the road continues

along the right side of the river ; but any passage that way is said to become presently very dangerous, being beset by thieves, and later on by the wild truculent tribes of the Tsari district. The best method of advance appears to be to cross by a ferry named Nya-ko-drukha, three miles below the town, and proceed along the northern bank, through what is described as a "wealthy district," full of opulent monasteries and richly-cultivated slopes, with woods, gardens, and good roads. The chief monasteries on this side, within a few miles of Tse-t'ang, are Ngari Tatsang, Sang-ri Khángmar and Dansa T'il. Thence the river, after its slight northern inclination, flows nearly due east ; but, just before the 93rd meridian is crossed, it drops somewhat to the south. Between Tse-t'ang and this meridian, it receives several fine branch-rivers from the north, the chief being the Mik Chhu, or Zingchi Chhu. The districts on the left bank are Wo-kha, Nang-po, and eventually Kong-po, which latter district occupies both sides of the river.

In Kong-po, in long.  $93^{\circ} 12'$  or thereabouts, the Yeru Tsang-po makes a sudden and extraordinary bend to the N. N. E., the direction being about  $23^{\circ}$  east of N. The bend occurs just where the Khyimdong Chhu from the south flows in. This run continues about seventy miles, when it becomes rather more easterly, pursuing a N.-E. progress for some fifty miles further, until, in lat.  $29^{\circ} 56'$  N. and long.  $94^{\circ} 4'$  E., its northernmost apex is gained.

This point in the river's course is the chief landmark in the whole run through Tibet ; for now it starts on that great and sudden dive to the south, which is destined to carry it out of the country. At the northernmost point, therefore, we have the Yeru bending sharply on itself, with an inner angle of  $80^{\circ}$ , and proceeding first S. E. by S. then S. S. E. A lofty mountain range from the S. runs up to the apex within the bend, and, aided by another range above, or to the north of, the bend, running N. N. W. to S. S. E., seems to be the mechanical cause of this sudden southernly deflection. Passing now down the stream, we soon reach Gyalla Seng-dong, with the fort on one side and the monastery on the other side of the river, at a distance of sixteen miles from the northern climax above mentioned. From Tse-t'ang to this stage, it is difficult to estimate closely the length, including winds and loops, but 295 miles may be considered a fair approximation to the truth.

This section, from a few miles east of Tse-t'ang to Gyalla Seng-dong, has not been subjected to very careful exploration. It has been traversed by two native agents of the Survey of India, namely by G. M. N. in 1878 and by K. P. in 1886-87 ; but their surveying capabilities were only rudimentary. In our



map we have placed several localities derived from other native sources, and have corrected the spelling of names given by G.M.N. and K. P.

From Tse-t'ang eastwards, the Yeru is bordered on the south by a country viewed with mixed horror and veneration by Tibetans of the Central Provinces. Here, between the 92nd and 93rd meridians to the south, lie the districts known as A-yul and Jya-yul, and then the mystic Tákpo country (spelt *Dvag-po*) is entered. In Tákpo is the famous place of pilgrimage named Tsári T'ugka, and nearly forty miles S.-E. of this Tsári is the great snowy peak of Pal Tsári, which is the *ultima Thule* of Tibetan pilgrimage, involving a fortnight of hard travel from the banks of the Yeru Tsangpo. Tsári peak is said to be covered with thick pine forests at its base. The chief risk of journeys in Dvag-po and Tsári arises from the savage tribes dwelling across the ranges to the south of these districts, who appear occasionally to make raids on pilgrim bands. It is significant that the rest-houses, provided by the Tibetan Government in the country just here as well as in those tracts within the northern loop of the great river, are designated *fik-kyop*, or "fear-escapes."

Long ranges of hills radiate from the peak of Pal Tsári; those branching S. E. forming the water partings between the head-streams of the Kamla and the Subansiri, which eventually combine to make the river known in Assam by the latter name. A lofty branch from Tsári, however, runs up N. E. within the loop of the Yeru Tsangpo, and that range makes the southern watershed of the river, effectually shutting its waters out from any conjunction with the feeders of the Subansiri. Another range running N. N. W. from the S. E. forms with the Tsári range an inverted V. shaped angle right up within the northern apex of the Yeru, and again keeps the waters from joining the Subansiri stream during their great southern flight to the Abar country.

When, however, the river has turned the sharp northern angle, just before Gyalla Seng-dong is reached, one unaccountable characteristic concerning it seems to be this—the comparative want of breadth of the waters as reported by the two surveyors. In places, indeed, from so far back as the Tákpo (*Dvag-po*) district—before the northern bend begins—the river is said to be very narrow. At Gyalla Seng-dong, where the level above the sea has sunk to 8,000 feet, it is stated to be only 150 paces or about 110 yards in width.

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## SECTION : No. 5.

*(From Gyalla Seng-dong to Sadiya in Assam).*

At Gyalla Seng-dong the river seems to prepare for its drop into much lower regions than the Tibetan table-land. It here runs in deep gorges, probably more than one—the explorer refers to two other streams besides “the Tsangpo”—and a cascade of 100 feet in depth occurs at this point. Politically and commercially the place is an important centre. Trade routes from the Lhasá-China high-road through Kongpo, from Tsári, Tawang, Bhutan and the S.-W., from the P’oba country and Yunnan, and from Assam, appear to culminate here. Moreover, the barbarous border tribes to the south are not allowed to advance further than this in the traffic they carry on as middlemen in the commercial relations between Tibet and Assam. The numerous Jongs, or forts, presided over by representatives of the Central Government, which closely dot the country round, attest that vigilant supervision is deemed essential in these parts. From Gyalla Seng-dong southwards, however, there is only one Jong in the space to the frontier line 100 miles distant, the territory being of debateable ownership and being practically under the domination of Lho-pa tribes, who are probably identical with those known in Assam as Miri, Migi, and Abar.

The river from lat.  $29^{\circ} 35'$  seems substantially to take a southern direction, making every now and then a slight advance to the east; but it does not assume a really S. E. course until another degree to the south has been traversed. Indeed the longitude at Puding in lat.  $28^{\circ} 35'$  is apparently almost identical with that of Gyalla Seng-dong. The general level of the stream still continues to drop; and waterfalls are frequent. Some thirty miles beyond the last-named place, it passes over a cliff said to be 150 feet in height. Villages line the banks closely, and the further south one proceeds the larger and more populous are these communities. As we progress further south, the characteristics and customs of the inhabitants undergo a radical change. No monasteries are met with below lat.  $29^{\circ}$ , and the Tibetan language is no longer the vernacular. At Shobang, in lat.  $28^{\circ} 37'$ , that domestic system so distinctive of the aboriginal tribes of India—the provision in each village of a detached common sleeping place for the elder boys and of another for the unmarried girls—is first found. In the places lower down on the Tsangpo, this usage everywhere prevails.

At Shimong, in lat.  $28^{\circ} 26'$ , the great river commences a determined course to the east by south, and after the confluence of the Nyágrong Chhu from Dza-yul in long.  $94^{\circ} 34'$  the course becomes almost due east. Below the latter point of junction, no



agent of our Survey Department has penetrated. K. P., who reached this point from the north, mentions the name of the next place, about four miles lower down, as Miri Padam, and thence to the mountain gorges whence the Dihang embouchure opens is all *terra incognita*. But at the outside the distance from Miri Padam to the highest point reached on the Dihang from the south (*i.e.* by Wilcox) cannot exceed sixty-five miles. However, the main run in that hiatus is evidently easterly, because, while the conjunction with the Nyágrong occurs in long.  $94^{\circ} 34'$ , the Dihang is first seen issuing from the lower broken ranges in long.  $95^{\circ} 25'$ . From the observed run of the valley and the "lie" of the mist-clouds above the conjectured bed of the river, doubtless the turn of the river's course from east to south, in order to cut through the last ranges of the Himalayas, is very abrupt. Moreover, at Miri Padam it has already reached too far south to allow room for any gradual bend. In a direct line due south, Miri Padam (as may be seen from the map) is barely twenty-five miles from our own territory. The river there, however, curves due east, and traverses a distance of some seventy miles to reach the known point where, turning S. S. E., it issues forth as the Dihang.

#### THE DIHANG AND EASTERN BRAHMAPUTRA.

But let our river now be considered in relation to the point where, as the Dihang, or Dihong, it joins the main stream of the Brahmaputra, which it meets sweeping in a broad channel from East to West. Now let it be borne in mind that the Brahmaputra is already fairly in existence as a distinct river long before the Yeru Tsangpo (as the Dihang) joins it; and therefore it is a little inexact to speak of it—as is the custom—as being a continuation of the Tibetan river. Indeed, prior to the conjunction, it has already been flowing in a noble expanse from the Brahmakund pool, where it freed itself, as a turbulent mountain river, from the Mishmi hills. Further up in those hills, moreover, it has had a lengthy progress. The primary sources of the Eastern Brahmaputra are in fact in Tibet itself, although much further east than the upper waters of the Dihang. Those sources are the two rivers known as the Dzáyul Chhu and the Rong T'od Chhu, which drain and flow from N. to S. through the twin valleys of Dzáyul-med in S. E. Tibet. Coalescing before escaping from that mountain-locked district, the united rivers cut through the southern range separating Dzáyul-med from the Mishmi country, and thence, as the turbulent mountain river above mentioned, pass across the latter tract W. S. W. into Assam. Below Brahmakund, the waters, having developed into a considerable river, proceed from long.  $96^{\circ} 23'$  due west. Thence,

during a course of 80 miles, to the first union with the Dihang, the Brahmaputra—here sometimes styled the Taluka and sometimes the Lohit—receives no fewer than ten affluents of large draught, the chief being the Digaru, the Prenga, the Dhuli, the Dip'u, the Khundil, the Tenga-pani, the Noa Dihing and the Dikrang. Near Sadiya—fifteen miles above the first influx of the Dihang—the river has grown so broad as to include several large islands. Then the Dihang and the Dibang (which has just been augmented by the Sesiri) coalesce to meet the Brahmaputra in one combined stream, coming from the north at right angles to the Indian river. The Dibang-cum-Sesiri from the east unites with the Dihang about two miles previous to their union with the Brahmaputra. This forms the principal mouth of the Dihang.

Another and smaller branch of the great Tibetan in-flow makes entry about five miles lower down the Brahmaputra, the space between the two mouths of the Dihang being really the base line of a tall delta, the top angle of which lies far up the latter river. Its formation evidently has been brought about by the vast volume of water and the velocity with which that volume descends the steep gradients from the hills. An enormous mass of silt in solution, borne down thus violently, is suddenly checked, first by the Dibang stream meeting it with its output of 27,200 cubic feet of water per second, and next, still more determinedly, by the 33,800 cubic feet per second of the Upper or Eastern Brahmaputra, cutting it at right angles. The silt so checked has been deposited and in the lapse of centuries built up the pear-shaped delta. This second branch of the Dihang is much narrower than the main or first branch, the discharge being usually under 5,000 cubic feet. The bifurcation forming the delta occurs some fourteen miles up the stream ; and, while the main limb retains the name of Dihang, the smaller is known as the Lali-pani. Above the point of bifurcation, the measure of the discharge of the undivided river must be estimated at about 60,000 cubic feet per second ; for we do not think the late Captain Harman included the Lali discharge in his measurement of 55,500 cubic-feet made in 1878 for the Dihang above its junction with the Dibang.\*

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\* Admeasurement of the respective discharge of these rivers has been carefully made more than once ; first by Wilcox in 1825-26 and again in 1878 by the late Captain J. E. Harman. The calculations taken in December 1825 were not repeated in a winter month by Harman ; so these stand alone as the record of the discharge of the rivers at that season. But measurements in spring were made both in 1826 and in 1878 ; and it is surprising how closely those estimates agree together, although taken fifty years apart. We have given above the spring record,



Ascending the main stream of the Dihang, its appearance is majestic. Even where the waters exceed a mile in breadth, they sweep on in a deep swift flow. Some ten miles up, where in places they narrow to 500 yards, the enormous discharge being thus compressed, the current develops into mighty rapids. Upward navigation consequently becomes a laborious task. Two or three Miri villages occur on the west or delta-side of the river, which produces larger than mere jungle timber. The left-hand, or eastern, bank is occupied by the Abars, whose villages, however, lie inland, the chief stronghold being Membu, some twenty miles from the Dihang. Large numbers of deer frequent the banks where the ground is low, and, notwithstanding the strong current, even swim across stream. During the high summer rise in the waters, which does not reach its climax until June, the breadth of the Dihang, even above the point where the river parts in two, again approaches one mile, and occasionally exceeds that width. Then, again, a mile or so higher up, navigation, though it is still resorted to by the villagers on the banks for short trips, is almost impracticable. Eight miles above the delta-angle, the low broken hills of the outermost range of the Himalayas begin to start up. Here and higher up the mighty waters are in places parted into two or three deep channels separated by vast reefs of rock, each channel with violent current chequered by several falls twenty to forty feet high over which the streams drop with thunderous roar and clouds of vaporous spray.

The route up-country, as followed by the Abar tribes who occupy the banks of the Dihang above the delta, keeps mostly near the river-side (though the large villages lie off the river), for the banks along the hills, though besetting and precipitous, are not at all lofty. Colonel R. G. Woodthorpe estimates the average altitude of the hills besetting this portion of the river at only 4,730 feet, and the passes from the western valleys into the valley of the Dihang at 3,500 feet or under. Even much higher up, and as far as the valley can be traced with the telescope, it has been observed that the contour of the country round the river is low and undulating. Only a few isolated summits away to the north rise to five and six thousand feet, and the river, which bends abruptly in from the west, does not pass very near these northern peaks.

The river-banks, 25 miles up from the Brahmaputra, are all very steep ; but water is plentiful among lateral gorges above the banks on each side. Looking across the valley to the slopes on the other side, you descry waterfalls rushing down in every little ravine ; and if you travel along the circuitous pathway which, at varying height, leads round each spur, torrents must be crossed at frequent intervals. The route to be

traversed commonly follows upward the course of some stream, and that without evading the boisterous cascades, through the spray of which the traveller ascends with only such footing as is afforded by the wet moss-coated rocks, where the slightest slip would ensure immersion in the water.

No traveller of European birth has ascended the Dihang river-side higher than within the first lower ridge of hills.\* The Abars, with their poisoned arrows and their murderous propensities, are the wholesome deterrent to all such enterprise. Such emissaries of the Abars as visit Sadiya to receive the annual payment bestowed on the tribes as a bribe to refrain from looting the cowardly Assamese, speak in big terms of their own prowess and their numbers. Nevertheless, Colonel Woodthorpe, who had good views from neighbouring heights of their principal villages, thinks that the size of the villages, and therefore their numerical strength, have been greatly over-estimated.†

#### THE BRAHMAPUTRA IRAWADI CONTROVERSY.

The Dihang, by reason of its noble size, is worthy to be the continuation of the great river of Tibet ; and that it is, in fact, one and the same is generally deemed all but a certainty. An emissary of the Survey of India has traced the Tibetan river almost down to the southern line of demarcation betwixt Tibet and Assam—roughly, it is true, but his narrative is circumstantial enough to enable our experts to assign the point he reached with tolerable exactitude. From the south, moreover, the valley of the Dihang has been followed up to the low hill ranges to a point 65 miles E. S.-E. of the other point laid down on the Tibetan river. The question is—does the great river connect these two points thus brought so close together ?

Captain Harman reasonably thought that the most conclusive way to prove the identity of the rivers without actual survey would be to throw in the water a certain number of marked logs at any place low down on the Yeru Tsangpo

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\* Probably the furthest penetration in modern times into the Abar country was an excursion made by Mr. J. F. Needham, political officer at Sadiya, and some friends in 1885. They ascended the Dihang some 24 miles, their craft being drawn by ropes up several rapids, and then landed on the eastern bank. Thence they pushed their way N.-E. through difficult country, and by dint of pluck succeeded in reaching the Abar village of Membu, or Mebor, quite within the mountains.

† However, Colonel Woodthorpe's deductions cannot be accepted conclusively. For example, one of the places he viewed was Mebor, which was subsequently, in 1885, visited by Mr. Needham's party, who brought word that it contained about 300 dwellings, with a population which they estimated at 3,000, each dwelling harbouring a family of two or three generations.



accessible to some one of the survey exploring agents. If, then, these logs emerged below in the Dihang, the problem was solved. In fulfilment of this idea, the emissary mentioned above, K. P., was sent into Tibet in 1880, with the injunction to make his way to Gyalla Seng-dong, and there cast 500 logs of a defined shape into the river. At the same time Captain Harman had arranged that watchers should be stationed at the junction of the Dihang and Brahmaputra to ascertain if any of the logs passed that way. Owing to the bad faith of a Chinese lama who, accompanied K. P., who when in Tibet, sold him into slavery, the project for the time was not put into execution. Eventually, however, K. P. escaped, and after many vicissitudes, he, with commendable trustiness, succeeded in performing his portion of the scheme. He secretly cut his wooden floats and launched the whole 500 in a better place than that pre-arranged, namely at Bepung, about 35 miles lower down the stream, and nearer the frontier than Gyalla Seng-dong. However, this was done in 1883, three years after the time settled by Captain Harman, and when the watchers on the Dihang had ceased to expect the logs. Thus, whether the logs came down or not, the plan failed; but, even if the watchers had been on the alert, it must be remembered that the stretch of the river, with its currents and rapids, which the wooden messengers had to traverse from Bepung, was over 160 miles in length.

The attempt at ocular demonstration having miscarried, we may turn to inferential proofs:—

1. Our first position is this. If the Yeru Tsangpo, brought down to a point 65 miles distant from that part of the Dihang daily visible in British territory, does not connect with that river, whither then does it flow? The southernmost place to which it has been fairly traced lies approximately in lat.  $28^{\circ} 18' N.$ , long.  $94^{\circ} 36' E.$  Does it then suddenly turn S.-W. and flow into the Subansiri? But three great feeding branches of the Subansiri, each draining vast mountain-locked valleys to the west, have been already scientifically observed. If to their sources were superadded the waters of the mighty Tibetan river, could the discharge of the Subansiri in Assam by any possibility dwindle to 16,900 cubic feet per second, as measured by Captain Harman? No, indeed, avers the French School, the Yeru Tsangpo cannot flow S.-W. into the Subansiri; no, on the contrary, it turns and flows due east for some 100 miles or so, and then, when the northern verge of the Mishmi country has been reached just beyond the 96th meridian,

it is diverted in a S.-E. direction to skirt the southern side of the mountains walling in the Upper Zayul valley to the north, whence it enters the recognised basin of the Irawadi about lat.  $27^{\circ} 40' N.$  and long.  $97^{\circ} 25' E.$  However, a few glances at the revised map of these districts will demolish any such theory as the foregoing one. The Yeru Tsangpo has been followed south to lat.  $28^{\circ} 18' N.$ , and if we then carry it, as proposed, due east from there, where are we to work in the head-waters of the Dihang—the Dihang with its lowest summer discharge of 66,000 cubic feet per second? The course of this river, presumably from the west, would have to be pressed down, some miles at least, south of the parallel  $28^{\circ} 18' N.$ , that it might not coalesce with the course of the Yeru. Next, when we had traced it back west, it must somehow find its enormous water-supply amidst the feeders of the Subansiri.

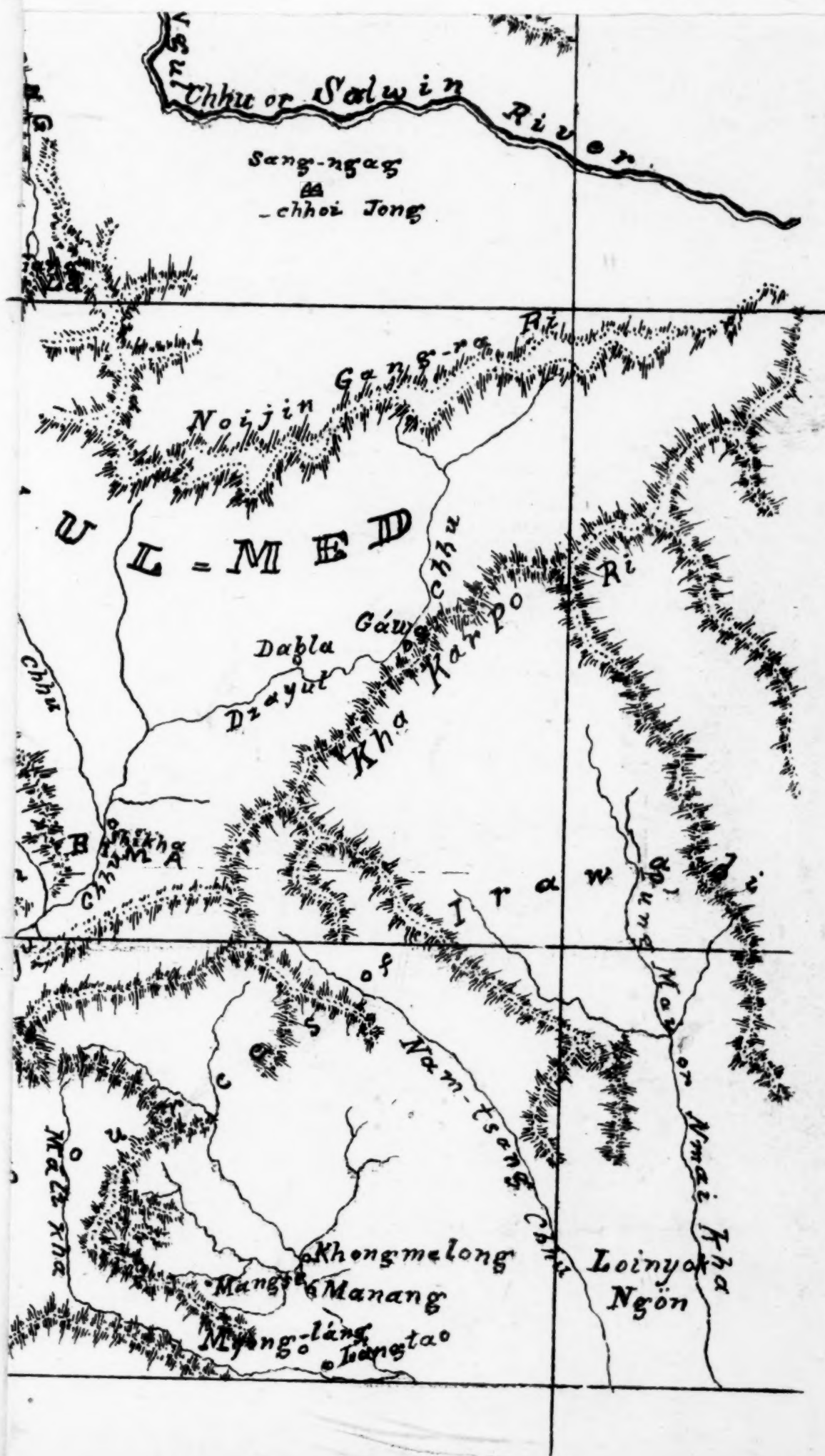
It was lately argued that the northernmost of the valleys formed by the ranges radiating from Tsari—that valley high up within the loop of the Yeru Tsangpo in the Gipmochen tract, might well prove the feeding-ground of the Dihang; *i. e.*, one small valley to make the mighty Dihang, while three of the same pattern further south are required for the Subansiri, which discharges one quarter the water of the Dihang!

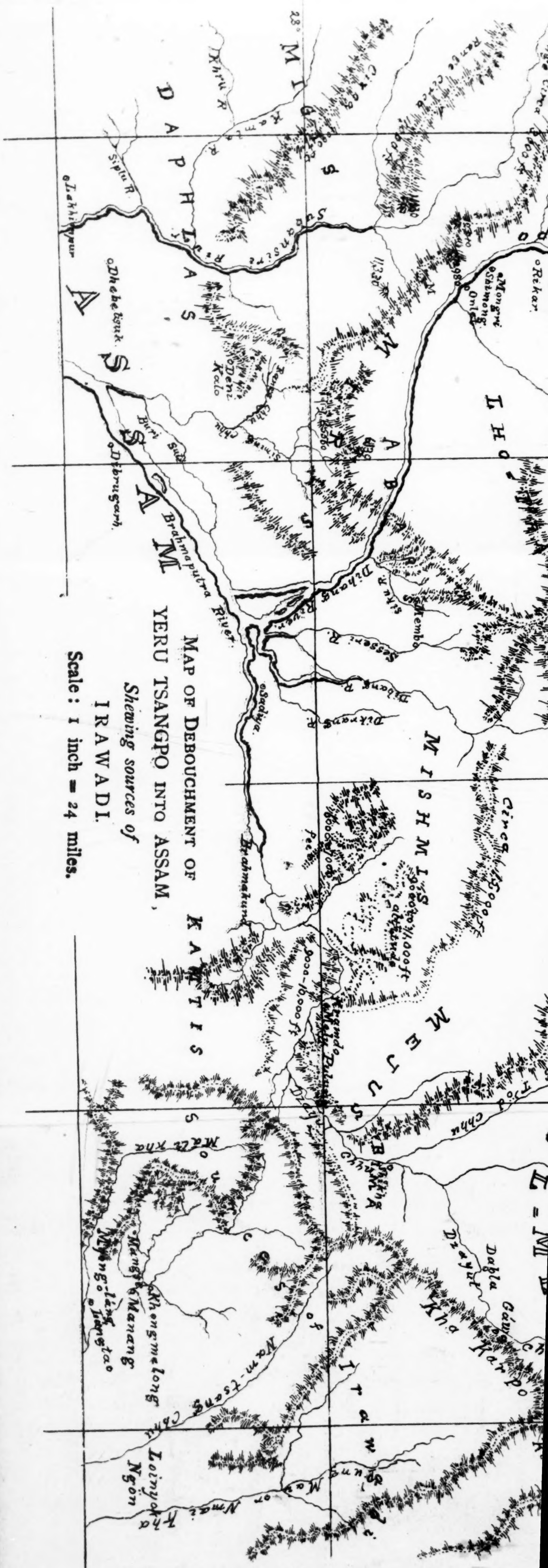
2. Worse difficulties occur from the east. The conjectured course of the Yeru into the Irawadi valleys must be manœuvred so as to avoid contact with the early courses of the Dibang and Sesiri rivers, which rise at least as far north as lat.  $28^{\circ} 35' N.$ , so the Yeru ought to sweep up further north than that latitude before turning again South-East. It would for this purpose have to mount to a district of *much higher general level than that from which it had flowed*, most probably ascending from 5,000 to reach 8,000 feet, the estimated level of the country north of the Dihang sources! \* Moreover, as it turned S.-E. and passed within the Mishmi country S.-W. of Lower Dzayul, the flow upward would be still steeper. An equally arduous

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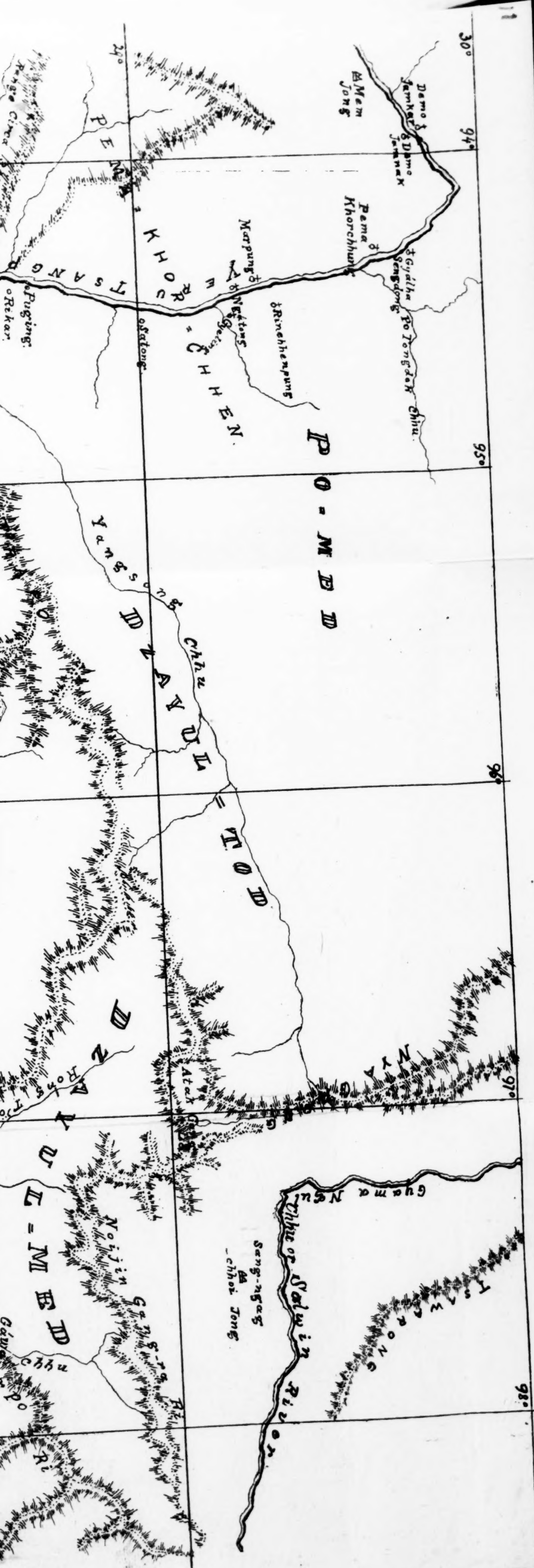
\* That the general level of the tracts lying east of the traced southerly course of the Yeru (from Gyalla Seng-dong to Miri Padam) slopes upward as you pass eastward to the bounding ranges of Dzayul, is evident from the fact that all the observed rivers east of long  $95^{\circ}$  flow determinedly westwards. Thus the great river which A. K. reported as leaving the Ata Gangla range in lat.  $29^{\circ} 25' E.$ , namely the Nagrong Chhu, proceeds unfalteringly westward across the very district through which the Yeru, to join the Irawadi, would be flowing eastwards!















task would have yet to be attempted before the Irawadi was gained. The mother stream of the Eastern branch of the Brahmaputra would be encountered in the Mishmi country running from N.-E. to S.-W. to enter N.-E. Assam. Unless, then, one large river can neatly cross the course of another, the Dzáyul Chhu (as the Upper Brahmaputra is here styled) would effectually bar back the Yeru in further progress to the Irawadi. Our map will show this clearly.

3. The exploration of A. K. proved that no great river from the west entered Dzáyul-med (Lower Dzáyul) through its lofty western barrier-mountains, to wit, the Ata Gang La range. Thus the possibility of any round-about route further to the north and thence into the Irawadi is put away.
4. By the later investigations of Colonel Woodthorpe and Major Hobday, now confirmed by the journey of Prince Henri d'Orléans, the whole argument is practically disposed of; because the actual sources of the Irawadi have been almost exactly located. The three primary feeders have been traced nearly up to the base of the great Kha Karpo range, which, to the north, walls them off inexorably from Lower Dzáyul; while, to the East and North-East, another range clearly shuts off communication from any Tibetan river proceeding to the south *viâ* the gorges of Western Yunnan. But, again, let the reader consult our map.

The conclusion, therefore, is irresistible. It is the Yeru of Tibet which passes south through the Assam-Himalayas, and which shows itself, in about long.  $95^{\circ} 20'$  E., as the river known in Assam as the Dihang and ultimately as the Brahmaputra.

#### CONCLUDING REMARKS.

As to length, our river may have assigned to it an extent of 1,308 miles up to its union with the Eastern, or Upper, Brahmaputra. Then, adding the course onwards to the mouth of the Megna, in the Bay of Bengal, we may put the full lineal measurement at 1,920 English miles from source to sea.

Again, the catchment-area of the river should be estimated. It rises, as we have seen in the morass, fed by glaciers, of the Nyimo Namgyal range, hard by the Manasarowar lakes; and it drains the whole of Southern Tibet substantially from long.  $82^{\circ}$  E. to long.  $93^{\circ} 30'$  E., its northern influence so far being limited to the south of lat.  $31^{\circ}$  N. However, further east its basin becomes more restricted, not extending so far to the

south as is the case in the western parts. Having next abruptly curved up to the north as far as the 30th parallel of latitude, it there receives a drainage from about a degree of territory further north than that parallel. Then, as suddenly running down S. S.-E. for about 170 miles, near but beyond the 94th meridian, the river absorbs the waters from the country lying to the east of this southern course, even as far as to the 96th meridian. Thus, before the Yeru Tsangpo enters Assam, its basin has extended through 14 degrees from west to east with an average breadth, north and south, of  $2\frac{1}{2}$  degrees throughout; with a drainage covering some 112,000 square miles. Such is a rough estimate of the dimensions of the stupendous superficial area over which the great water-artery of Tibet causes its absorbent effects to be felt.

When the river rises in the Chyema Yungdrung springs, its bed lies 14,700 feet above the level of the sea. After a course of 540 miles to the neighbourhood of Shigatse, its elevation has fallen only 2400 feet, giving a gradient of descent of nearly  $4\frac{1}{2}$  feet to the mile, or 1 in 1187, east to Tse-t'ang. The rate of descent continues almost precisely the same, the fall being 1,000 feet in 242 miles. In the next 250 miles of the river's course, however, the downward gradient increases amazingly; the descent in that space being 3,300 feet or 13 feet per mile. South of Gyalla Seng-dong, where the altitude is 8,000 feet, we have no certain record; but the drop is believed to be very rapid, as the general level north of the Assam Himalayas, taking the height of the abutting peaks, can hardly exceed 3,500 feet. Then, when, as the Dihang, it has fairly cleared these mountains, the wonderful river, once a waterway, 14,700 feet above sea-level, is found flowing at an elevation of less than 800 feet. Finally at the tri-junction with the Dihang and Brahmaputra, the level is 420 feet.

GRAHAM SANDBERG.



## ART II.—THE CIVIL CODE OF ZURICH.

**A** PART from Federal laws, there are some twenty-five or thirty different Cantonal Civil Laws for the two and a half million inhabitants of Switzerland. Nor do these all belong to the same family of law, Switzerland being the meeting point of three different races. In a majority of Cantons, German law flourishes in a state of purity which has not been maintained in Germany itself; the other Cantons are ruled by French or Italian law, that is, by the Roman law, more or less modified, the basis of the legislation of western and southern Europe.

The six non-Germanic Cantons constitute what is called Roman Switzerland. They are Fribourg, Geneva, Neuchâtel, Valais, Vaud, and the Tessin. They each have a Civil Code, in French for five of them, and in Italian for the Tessin. Of the nineteen other Cantons, some have complete Codes, others have only fragments of written Civil law, while others have no Codes at all. Since 1880 certain Federal laws have been passed dealing with certain portions of the Civil Law, and, as regards these portions, such laws of course supersede and exclude the separate Cantonal laws.

### FEDERAL CIVIL LEGISLATION.

Up to a comparatively recent date, the various Cantons were absolutely sovereign as regards their Civil laws, and there were only a few points on which some of them had agreed to limit such independence by inter-Cantonal *concordats*; for instance, defects which render a contract void, mixed marriages, &c. This independence caused serious inconvenience, and, with a view to introduce uniformity in certain matters of general interest, it was decided to revise the Federal Constitution of 1848. The text was altered, and finally adopted in 1874. Article 53 declared that the civil status and the maintenance of the Registers in connexion therewith were within the province of the civil authorities, and that the Federal Legislature would legislate on the subject. Article 54 placed the law of marriage under the protection of the Confederation; while Article 64 reserved to the Confederation the right to legislate concerning civil capacity, the law of obligations, including commercial law, and the law of exchange, literary and artistic property, and actions for debts and bankruptcy. The rest of the Civil law was left within Cantonal competence.

Since the adoption of the Federal Constitution of 1874, several Federal laws have been passed on the above subjects,

the principal of which is the Federal Code of Obligations of the 14th June, 1881.

#### CANTONAL CIVIL LEGISLATION.

There are complete Civil Codes for the Cantons of Fribourg, Geneva, Neuchâtel, Valais and Vaud (French Switzerland); for the Tessin (Italian Switzerland); for Argovie, Berne, the Grisons, Lucerne, Schaffhouse, Soleure, and Zurich (German Switzerland). Glaris and Zong have had a Code for a few years, from which, however, the law of obligations is omitted, the Constitution of 1874 having placed it within the Federal domain. Thurgovia and Nidwalden have commenced to codify, and have passed two or three of the four or five books of which the German Civil Codes are generally composed. The three Cantons of Schwytz, Uri and Saint Gall and the three semi-Cantons of Obwalden, Appenzell, and Bâle (country) are ruled by old customs or local statutes. For the Town of Bâle there is a remarkable project, which has not yet been passed into law.

Some of the complete Codes are based on the French Civil Code, others on the Codes of northern Italy. The Code of the Tessin is the only Code in the Italian language, unless one adds the Code of the Grisons, of which, in addition to the original German text, there is an official Italian edition. The eleven more or less complete Codes of German Switzerland are divided into two groups. The Codes of Central Switzerland, passed between 1830 and 1850, are modelled on the Austrian Civil Code, though they give full play to local customs; those of Eastern Switzerland follow the Code of Zurich as their pattern. Two others, those of the Grisons and of Glaris, stand by themselves.

The first projects prepared by Bluntschli for the Canton of Zurich go back as far as 1844. This Code, since its promulgation, has served as a basis of codification for all the small neighbouring Cantons, some having almost textually copied it, while others have borrowed largely from it. Of all the Swiss Codes, it is the most worth study, owing to the importance of the Canton itself, the European reputation of its framer (Bluntschli), and the decisive influence it has exercised on ulterior legislation. Moreover, the revision it underwent in 1887 gives it an additional interest, as by such revision it has been brought into complete harmony with the Federal Code of Obligations passed in 1881. A Federal law on a particular subject, of course, takes precedence over a Cantonal law on the same subject, and after the passing of the Federal laws of 1874 and 1881 some inconvenience was caused by giving the judges considerable latitude of discretion in the application



of the respective laws. It was found necessary to revise the Cantonal Codes, and it is in pursuance of such policy that the Civil Code of Zurich was brought into harmony with the Federal law, and issued as a revised Code in 1887.

PARTICULAR PRINCIPLES IN FORCE IN GERMAN SWITZERLAND IN THE MATTER OF CIVIL LAW.

1. *Law of Persons.*

The abstract notion of domicile, such as is known to the French law, that is, which is often independent of an effective habitual residence, is quite foreign to the German law in general, and to the Swiss Codes in particular.

Prolonged absence may lead to a Judicial declaration of decease, having the same effect as the proved decease.

Judicial capacity, and the circumstances determining or modifying it, differed considerably until recently in different Cantons. For instance, the age of majority varied from 19 to 24 years, while women were subjected to many disabilities *propter imbecillitatem sexus*. In such matters uniformity has since been introduced by the Federal Law of 1881, which, however, has left untouched the local laws concerning Guardianship. Guardianship has everywhere the character, not of a family institution, but of a public institution, in which the family has only a subordinate part to play.

It has, however, been doubted whether the guardianship of authority has conferred on minors as many guarantees as the guardianship of the family in French countries with its incessant appeal to the family spirit, devotion and disinterestedness.

Before attaining his 20th year, that is, the legal age of majority, the minor can be emancipated; but this emancipation does not create, as in France and Italy, an intermediate state between the absolute incapacity of minors and the full capacity of majors; it at once confers the rights of majority by anticipation.

2. *Law of the Family.*

Before 1874 there was a chaos of varying Cantonal laws, and on the subject of marriage, the requisite age, impediments, publication, modes of celebration and proof, means of relaxing or dissolving the conjugal bond; and that not only from Canton to Canton, but even between citizens of the same Canton who might belong to different churches. Uniformity on these subjects was introduced by the Federal Law of the 24th December, 1874. As regards all that concerns matrimonial settlements and the control of the property, the Cantons are left to legislate as they please. The system

almost universally adopted is a system without joint ownership, according to which the husband has the exclusive management and enjoyment of the wife's property.

Adoption is regarded as an exceptional institution, and is unknown in a certain number of Cantons. Legitimation can take place, not only by subsequent marriage—which is everywhere admitted—, but also by an adjudication as to the father in the case in which he would not marry the mother, or by a judicial judgment when the children have been born on the faith of a promise of regular marriage the realisation of which has been prevented by death.

The voluntary recognition of natural children has but a very small place in the Codes of German Switzerland; some do not even mention it. But the compulsory recognition by the father is the subject of minute provisions. In some Cantons an action may be brought by the mother for a declaration of paternity, while in others she can only get compensation or a pension.

A certain number of Codes give the benefit of legitimacy to children born without marriage, but during the period of regular betrothal or engagement (*Brantkinder*), when the marriage could not be celebrated owing to circumstances independent of the will of one of the parties. Such a provision seems natural and just, seeing that it was only after the Council of Trent that the religious ceremony became the essential ceremony; before that it was sufficient if vows were solemnly exchanged in the presence of the two families, and followed by consummation.

### 3. *Real Rights.*

The theory of possession in the Codes of German Switzerland is more advanced than in the French Code, mere possession being protected by the law against all violence or disturbance, and a possessory action being given analogous to that which was given by the Roman law to the possessor *cum animo domini*.

Co-ownership is treated under the double form of property, simply undivided, of which several co-parceners have each a certain share not yet separated off (*mitrighenthum*), and of common property (*gesammteigenthum*), which supposes that each of the co-sharers is owner of the whole, subject to the restrictions caused by the similar rights of others. Such common property, foreign to the Roman and French law, still holds a considerable place in most of the German Cantons, especially for the rights of pasturage in the Alps.

Property passes only in virtue of the carrying out of certain formalities. Ownership is not acquired by mere possession;



it is necessary that such possession should continue for the period required by prescription.

#### 4. *Law of Succession.*

Succession is essentially a family right in all German legislations. It is, then, mainly regulated by the law, and is testamentary or contractual only in a subsidiary degree.

The surviving husband or wife is generally classed among the heirs, and inherits with the most favoured of them. Natural children have no right as regards paternal succession, but are assimilated to legitimate children *quoad* the mother and maternal relatives.

The principle of division in equal shares between the paternal and maternal lines is followed in Zurich, Zoug, Bâle, Thurgovia, and the Grisons. Schaffhouse is, with Neuchâtel, the only Canton in which is still applied in all its rigour the old system of *paterna paternis materna maternis*. In the Cantons of Unterwald, Schwytz, Uri and Lucerne, the succession goes, in fault of descendants, entirely to the paternal line; in Appenzell, Saint-Gall, Argovia and Soleure it goes to the relative who is nearest in degree and to the surviving husband or wife.

Females are no longer excluded by males, but sometimes they have a right to a smaller share only, and sometimes they are absolutely excluded as regards certain kinds of property, while permitted to share other kinds. The Code of Zurich still presents some curious examples of these peculiarities, but the principle of division in the proportion of five parts for boys and four for girls (which was embodied in the Code of 1854-55) was abandoned in 1887 in favour of the principle of equal division between the children of both sexes. Even among male heirs there are some anomalies in Switzerland, for the superior right of the youngest son is still recognized by the Codes of Berne and Soleure.

The proportion of the property which may be alienated by will, varies infinitely, according to the origin of the property and the proximity of the heirs interested. In the district of Einsiedeln (Schwytz), in virtue of very ancient customs, the power to make a will is absolute. "If any person," says the ancient customary law, "wishes to tie the whole of his fortune to the tail of a dog, he is free to do so." But, with this exception, the power of testators is strictly limited, especially when they leave descendants. In such a case, nothing can be willed away in Schwytz and Obwalden; in Appenzell only 2 per cent. of the net property, in Zurich 10 per cent., Glaris 15 per cent., and so on. In Schaffhouse the testator can dispose of the whole of his property only if he leaves no relations at all.

As a rule, the heirs who accept the succession are bound to pay the debts of the deceased *ultra vires hæreditarias*, and they can rid themselves of such obligation only by refusing the succession

#### CIVIL LEGISLATION OF ZURICH.

It is some forty years since the want of a proper Civil Code began to be seriously felt in the Canton of Zurich. The country was still ruled by the *Stadt-und Landrecht* of 1715 and the *Stadterbrecht* of 1716, supplemented by local statutes or customs, going back in some cases to the 16th century. These no longer answered to modern requirements, and the Government recognised the necessity of making a *tabula rasa* and building on a new basis. The task of framing a code was entrusted by the Grand Council of the Canton to Jean Gaspard Bluntschli, who was born at Zurich on the 7th March, 1808, and had been, since 1833, Professor of German private law in his native town.

In 1844 appeared the first project of the Law of Persons, the Law of the Family, and the Law of Succession ; in 1851 that of the Law of Things, and in 1852 that of the Law of Obligations.

The spirit in which Bluntschli worked may be best stated in his own words : " In studying the juridical monuments of the past, the legislator will at once see that they contain much that is obsolete ; all this he must boldly sacrifice, while taking care not to touch what is still good and solid. Other portions he will find strangled, or ill developed ; it will be his task to give them space and the form which suits them. He must at once reform and restore, clear away rubbish and consolidate. From this point of view his mission is primarily conservative. But, on the other hand, if he would satisfy the needs of his time, he must not remain immobile and immovable ; he must remember that his work, to be useful, must, above everything, be a useful work. He must study the inmost and actual requirements of the people for whom he is called upon to legislate, and must harmonise legal systems with the national traditions and the needs of the time. "

The Code was finally passed in 1854, and, as soon as it was promulgated, Bluntschli published a commentary, which, considering that he was also the author of the code, faithfully and clearly interprets the spirit and sense of the law. Subsequently, as has been stated above, some new local laws were passed, and especially the new federal laws on obligations, civil capacity and marriage. A revision of the Code was imperative, and for this purpose the Government appointed a Commission of judges and jurists. The text was finally approved by them on the 27th October, 1886, adopted by the



National Council on the 19th April, 1887, and submitted to the people, conformably to the Zurich constitution, and ratified by them, on the 4th of the following September. The figures of the popular vote are significant :—

Inscribed electors, 75,837—Voters : 53,820 For the law, 31,930, against 11,076. Blank papers, 10,771, invalid papers, 43. The Code of 1887 came into force from the 1st January, 1888, and is now the Civil Law of the Canton of Zurich.

#### POLITICAL AND JUDICIAL ORGANISATION.

The Constitution of the Canton of Zurich is dated the 18th April, 1869. The Canton contains 11 districts (*Bezirke*), with 199 Communes.

The people directly exercise sovereignty, in this sense that they choose all the officials (for three years), and almost all the judges (for six years), and that they participate with the Cantonal Council in the making of the laws, thanks to their dual prerogative of the initiative and the *referendum*.

Subject to the above reservation, the legislative power is exercised by a Grand Council, or Cantonal Council, consisting of more than 200 members, at the rate of one Deputy for every 1,200 of the population.

The Cantonal administration has at its head an executive Council (*Regierungsrath*) of seven members, each presiding over a special Department. Each district is administered by a District Council (*Bezirksrath*), composed of a *Statthalter*, or Prefect, as President, and of two or four assessors.

The Communal authorities are : (1) the Communal assembly (*Gemeindeversammlung*), in which all active citizens sit as of right ; (2) the Municipality (*Gemeindrath*—Communal Council), which consists of five members at least ; (3) the *Gemeindamann*, an official who is subordinate to both the administrative and the judicial authorities of the district, and performs the somewhat complex functions of police officer, assistant of the *Statthalter*, bailiff, judicial agent, &c.

Justice is administered by a superior court, Presidents of District Courts, District Courts and Judges of the Peace, in addition to a Commercial Court and a Court of Cassation. The judges of the superior Court are appointed by the Cantonal Council ; the presidents and judges of the District Courts are elected directly by the people. The Judges of the Peace are very numerous, there being one for each Commune. They are appointed by the people. They are conciliation authorities (*Sühnebeamten*), and also judges for suits of trifling value ; but even in such cases the parties may demand that the judge be assisted by two jurors.

The Court of Cassation (*kassations gericht*) revises the deci-

sions of the Superior Court, its Benches, the Court of Commerce, and the Court of Assize. It consists of nine members elected by the Cantonal Council; but the President alone receives a small fixed salary, the other judges getting only a fee for each sitting.

Since 1874, the profession of advocate has been free in the Canton of Zurich. Every citizen in possession of his rights can represent or assist a party before the Courts.

#### SOME PROVISIONS OF THE CODE.

Under the head of Private Corporations, the Code has an important provision (Art. 35) which enacts that, "when a Corporation has degenerated, or compromises either the public credit or other public interests, the Executive Council of the Canton is empowered to step in for its reformation. Moreover, the Cantonal Council has the right to dissolve Corporations which have an illicit or immoral object, or one that is injurious to the public good; but this can be done only after first giving the Corporation an opportunity of justifying its existence."

#### POSSESSION.

Art. 96 enacts that possession is lost in principle when the possibility of exercising material control over the object, or the intention to exercise such control in one's own interest, ceases to exist.

Wild animals can be possessed only as long as (without actually shutting them up) one is in a position to exercise a material control over them. Animals which have been tamed or reclaimed are assimilated to domestic animals, so long as they retain the habit of returning to their owner.

The possessor of a swarm of bees which has flown away can pursue it for three days, and is considered to have been all along in possession of such portion as he may recapture.

#### IMMOVEABLE PROPERTY.

It is objected against the codification of family and personal law that its development may be thereby arrested, while much that is unreasonable may be preserved and stereotyped. But it would be an excellent thing for the Hindus and Mahomedans of India, and preventive of much needless litigation, if the Legislature were to place on the Statute book a few simple rules such as those, for instance, on joint ownership in the Codes of Zurich and Montenegro. The late Sir Henry Maine said: "Let us have uniformity, if we can have it; diversity if we must have it; *but in all cases certainty.*" It is criminal in any Government to allow its citizens to be impoverished by litigation which could be prevented by the enactment of a few simple sections of substantive law.



Art. III of the Zurich Code imposes on every co-owner the obligation of contributing towards the preservation of the joint property, and supporting the incidental charges, in proportion to the extent of his share. *If a co-owner does not fulfil this obligation, each of the other co-owners may require him to give up his share for a reasonable price.* Again as regards all that concerns the ordinary management and mode of enjoyment of the common property, the decision belongs to a majority of the sharers, or, rather, to a *majority of the shares*. When the co-owners cannot agree as to the partition or sale of the joint property, the Court may make over the property to one of the co-owners, and fix the price to be paid to the other co-owners for their shares. The Court may also, with a view to putting an end to the undivided status, order the property to be sold by auction among the co-sharers only, or at public auction. In the Canton of Berne (Art. 399) every co-owner has the right to demand the sale by auction of the common property. The want of authoritative rules, and the existence of uncertainty, causes a great deal of bad blood and litigation in India which might be avoided. It is admitted that the system of joint ownership is in many respects a curse to India, preventing the improvement of property, encouraging rack-renting by a crowd of petty owners, and saddling the land with more mouths than it can support, to the detriment of other industries and occupations; and a rule such as that contained in the Berne Code would give an impetus to manufacturing and industrial enterprise, while cutting the knot of many difficulties which already embarrass the revenue administration and threaten to swamp the Collectorate Establishments.

The rules regarding alluvion, accession, building on another's land, &c., are much the same as those of the Roman law. But there is a provision—under the head of alluvion which might with great advantage be adopted in India, with its enormous ever-shifting rivers. If a river cuts away bodily a large piece of an estate, and it is attached to an estate lower down, or to the opposite bank (*incrementum patens*), the owner of the piece carried away may claim it, *unless the owner of the estate to which it has become attached is willing to pay a reasonable price for it*; but he must exercise such right within a year. If the portion italicised were made law in Bengal, there would be a great diminution of affrays and homicidal riots due to boundary disputes, which annually recur after each rainy season. The *deara* (riverain) lands in Bengal remain submerged for months, and all or almost all physical landmarks are obliterated. Hence an annual scramble, when the sowing season comes on, a period which is not a happy one for the policeman and the Magistrate.

Article 139 declares the right of passage to the nearest public way over the lands of neighbours, when no such exit already exists. But the path must be taken over the lands of those neighbours who will suffer the least thereby, and any loss occasioned must be paid for.

Article 150 contains a noticeable and very useful provision regarding plantations of trees. Garden trees and ornamental shrubs cannot be planted, without the adjoining owner's consent, at a lesser distance than sixty centimetres from the boundary between the two estates; and up to a distance of four metres from such boundary they must be so cut and pruned that their height does not exceed double such distance. The planting of forest trees or large ornamental trees, such as poplars, chestnuts, plane trees, and also of walnuts and cherry trees, is prohibited within eight metres of such boundary, and other fruit trees or ornamental shrubs, which are not periodically pruned, within four metres; and even for this latter class of trees the prohibited distance is eight metres, if the adjoining estate be a vineyard. If the adjoining land is a forest, trees must not be planted within fifty centimetres of the boundary. Actions for the removal of trees planted within the prohibited distances must be brought within five years from the date of planting.

The portion of the Code dealing with immoveable property contains some simple provisions regarding matters which, in the absence of certainty as to what the law and individual rights are, must constantly give rise to disputes in an agricultural community. It is declared, for instance, that, when the trunk of a tree is on the boundary, the tree belongs in common to the two neighbours. In the absence of any agreement to the contrary, every owner has the right, with a view to utilising his own land, to cut the roots of trees which encroach on such land (Art. 156). As regards overhanging branches, the neighbour may either appropriate the fruit on such branches, or require the owner of the tree to cut them. It will be observed that the neighbour cannot himself lop off the branches, as in England. In India there are, doubtless, local customs on such points, but sometimes they are doubtful, and in any case the Civil Courts are not good tribunals for ascertaining them. It is really a chance what the Munsif may decide, and of course a Magistrate is in equal difficulty when such points arise before him, as they often do. What is wanted is a simple section of law one way or the other, for the hackneyed objections against codification are utterly inapplicable to such matters as these.

The Code also contains provisions regarding the height of enclosure walls and hedges. Every landowner can compel



his neighbour to proceed with him to the demarcation or re-demarcation of the boundaries of their adjoining properties (Art. 166). Art. 170 enacts that stables, pig-styes, drains, tan-pits, dung-heaps, &c., must be kept at a distance of not less than a metre and a half from neighbouring habitations. Art. 172 is simple, but important: "The owner of a field has a right of opposition, if any person, by taking away from it the light of the sun, causes him serious damage from the point of view of agricultural produce." The writer, when camping about districts in Bengal and Behar, has often had complaints made to him by one cultivator against another for planting trees, the shade of which lessens the outturn of the former's crops.

"Each co-owner of a joint boundary wall can utilise it up to half its thickness, provided he does not thereby endanger the object of separation and security with which the wall was built, but he who wishes to make use of this right must first warn the other of any modifications of construction which he intends to make" (179). Such a simple provision as this would, in a district in which the writer recently served, have prevented a fruitful crop of cases both in the Criminal and in the Civil Courts.\*

#### MOVEABLE PROPERTY.

The finder of a thing is bound to try and discover the owner. If the value of the thing does not exceed fifty francs, the fact of discovery must be published in the Commune; if the value exceeds such sum, the finder must give information to the District Court (197). As regards treasure trove, half belongs to the finder, and half to the owner of the house or land where the treasure is found. But if the finder has made search without authority, or if he conceals his discovery, his share is paid over to the poor box of the Commune.

The provisions regarding the capture of animals, ownership of things made with materials belonging to another, mixture of things belonging to different persons, &c., are analogous to those of the Roman law.

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\* India is overridden with adjective or procedure law: what the country requires is a few simple provisions of substantive law in matters which concern the daily wants and occupations of the people. In the case referred to, one neighbour wanted to do just what the Zurich Code allows. He wanted to remove half the wall with a view to build it up again thicker and stronger, so that it might bear an upper room. The other neighbour denied his right to touch the wall or remove a single brick of it. The Munsif (Civil Court of First Instance) probably applied his notions of justice, equity and good conscience, and if the case ever came on appeal before the High Court, probably that Court applied English cases dealing with buildings of a totally different character to the buildings in question.

### CROWN RIGHT AND PRIVATE RIGHTS DERIVED THEREFROM.

All lakes and rivers, and, as a principle, even streams, form part of the public domain, unless private rights over them be proved to have existed from an ancient date. It will be observed that the presumption is against the existence of private rights.

All hydraulic works, even when set up alongside private waters, are subject to the supervision, and, if alongside public waters, to the permission, of the State authorities. Everybody may use the waters of the public domain, subject to police regulations; but the floating down of logs not bound together is not allowed without the permission of the State. Art. 222 is very important. It enacts that riparian owners cannot prevent boatmen from using a towing path, or from landing on the bank in case of necessity, or from fastening their boats temporarily to the bank, or even, in case of need, from depositing their cargo thereon. But the boatmen are liable to pay for any damage they may do.\* Art. 223 declares that when timber is floated down water courses, those in charge of it may land on the banks for the purposes of such floatage.

The right of fishing in the waters of the public domain, *and in the canals and ponds which communicate with such waters*, belongs to the State, or to those to whom the State has made over such right. But in the lake of Zurich, and on all other lakes in which the fishery has not been leased, fishing with a line from the bank is free to all (226).

State rights over mines extend to all minerals in the bosom of the earth which can be utilised, to all saline substances, sulphur, coal, lignite and anthracite; but they do not include quarries, stones found scattered on the surface of the soil, even though they contain minerals, turf, saltpetre, or medicinal springs.

### SERVITUDES.

Art. 239 is important, as making a departure from the usual theory of Roman law, which has passed into most modern Codes, namely, that a real servitude can exist only for the benefit of an estate or tenement, and not for the profit of a person or association of persons. Bluntschli has taken into consideration local interests of long standing, which would have been sacrificed had the Code made the existence

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\* This is the Roman law, and not only is the common law the same in India, but there is actually Statute law in some of the old regulations, see, for instance Reg. XI of 1825. This regulation was apparently not known to Justice Norris, who, in a case that came before him, decreed a Zemindar's demand for "*konta-gârd*," an illegal cess, which the Zemindar had levied from boats tied up to the bank.



of a dominant tenement the condition *sine quâ non* of the recognition of a service connected with the land. For instance, some estates were burdened from an ancient date with a servitude not to build, in the interests of shooting clubs, which were not always *owners* of the *range* for the utility of which the servitude existed. Again the inhabitants of a Commune had from centuries the right to go and collect dead wood in a forest belonging to another. In these and other analogous cases there was a permanent right resting on a servient tenement; and the Zurich legislator has not considered that the absence of a dominant tenement should suffice to take away from such right the character of a veritable servitude. The character of a servitude has even been considered to attach to the right accorded to certain persons, or to members of a certain family, to use gratuitously the wine-press set up on another's land.

All servitudes, except manifest or apparent servitudes, have to be inscribed on the Landed Registers.

The right of footway (*fusswegrecht*) implies the right to carry loads, or to be carried on a man's back, but not that of going on horseback, in a carriage, or with cattle. Unless an aggravation of the burden is the result of circumstances, the owner of the servient tenement is not bound, in order to facilitate the passage with high loads, to cut the trees along the path or to let them be cut more than two metres in height.

Art. 263 is as follows: "In the absence of express prohibition, a pedestrian has the right to use every beaten path across fields or in a forest. Nevertheless, the existence and free use of such a path are not sufficient to prove that the land traversed is burdened with a servitude."

Art. 264 is: "He who has a right of way for a carriage can also go along the path on horseback, or lead cattle along it by the hand, but he cannot drag heavy loads along the ground, or drive along loose cattle." There are frequent disputes in India as to whether paths are only footways, or carriage ways also, or cattle ways, and some clear provisions in such matters are much called for. Owing to facts and circumstances which would occupy too much space to detail here, the chances are very much against proving any local custom in a civil court in India. The above sections are quoted as instances of the importance of having clear definite rules regarding matters which concern the daily lives and pursuits of the people.

As regards forest rights and easements, there is a most important provision (273), which the Indian settlement officer and collector will read with interest, namely, that the total value of such rights and easements must never exceed the annual income of the forest.

Of course, in temporarily settled districts which come under periodical re-settlement, the settlement officer's record of rights provides for such matters as those above noted, or most of them. But where the settlement is permanent, there is an almost complete absence of substantive law.

The easement of habitation cannot be alienated or leased. Such a prohibition should be imposed on Hindu coparceners; but shares of ancestral family mansions are often sold in the civil courts for debt! Art. 303 enacts that, if a co-owner has the right to a corner in the house (*Winkel un Haus*), he can claim a place suitable to his status and requirements; but if the right has not been given to him in view of a family, it is not permissible for him, by marrying, to cause a new family to share such portion. The co-sharers of a Hindu family house go on increasing with time until their number attains several hundred! The litigation and loss caused by want of agreement or co-operation among co-sharers are deplorable.\*

#### OBLIGATIONS.

Art. 417 is worthy of notice, as giving a right of action for damages to any person harmed in the course of a suit "by the intentional fault or the gross negligence of a judge."†

Art. 420 is as follows: "When, by reason of the exercise of public authority, a private person has suffered in the general interest some loss which the law does not impose on him the obligation of bearing personally, for instance, by reason of military exercises or measures prescribed by the police, he has an action of indemnity, not against the officer causing the loss, but *against the State, subject to the condition, however, that his case is analogous to compulsory land acquisition, or to a forced deprivation of rights for the sake of the public utility*. In other cases, he has no claim to be indemnified.

Under the head of "gifts," Art. 428 enacts that the restrictions to which testamentary gifts are subjected in the interest

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\* In a station in which the writer once served, there was a fine house, which every successive Magistrate was willing to occupy as a residence. However, the co-sharers could not agree as to the cost of repairs, and the house gradually became a ruin. In such cases, any co-sharer should be allowed to apply to the court to have the house sold by auction. The people cry out for the bread of substantive law, but they are choked with the stones of elaborate procedure codes, the provisions of which favour the wealthy or unscrupulous litigant!

† High Court Judges in India have sometimes censured subordinate Magistrates on a mistaken view of the facts, or relying on statements made before them, which, had they (the judges) taken the trouble to look through the record, they would at once have seen to be inaccurate. Cases have occurred in which judges have made disparaging remarks which they would never have made had they even taken the trouble to read carefully the judgment of the lower court. Such instances of gross negligence (equivalent to legal malice) should certainly be actionable.



of the heirs do not apply to *donationes inter vivos*. This principle, which is quite opposed to that of the French law, is frequently met with in the Codes of the German family. It is justified by the consideration that, in a *donatio inter vivos*, the donor deprives himself to the profit of the donee, whereas, by purely testamentary liberality, he does not personally deprive himself of anything, but despoils his heirs to the profit of a third person. The *donatio inter vivos* is, therefore, only the legitimate exercise by the owner of the right of disposition which he enjoys over his property, whilst legacies exceeding the disposable quota constitute an encroachment on the rights guaranteed by law to the heirs.

#### LAW OF THE FAMILY.

Betrothal (exchange of promises to marry) constitutes a special family relation. When one of the parties denies that there has been any promise, the promise is not considered to have been made, unless (1) there exists a written acknowledgment emanating from the party who denies the promise, or (2) the family of such party state that the promise has been brought to their knowledge, or (3) it is proved that the habitual usages and customs of betrothal have been followed,—for instance, that there has been an exchange of rings—or (4) in the absence of such usages, the habitual conduct and attitude of the parties for a prolonged period places the betrothal beyond a doubt (578).

As a principle, the breaking off of an engagement involves the return of the presents exchanged. But if one party has broken it off without sufficient cause, the other has a right to keep his or her presents, and can also claim damages. In the Canton of Berne, the person in fault may also be imprisoned for from four to twenty-four days, when the caprice is manifest, or the rupture causes a public scandal.

The Code carefully defines the respective duties of husband and wife, and imposes on the latter the obligation of contributing towards all expenses according to her means. The husband has the enjoyment and control of the wife's property and earnings, subject to the obligation of providing in a fitting manner for the upkeep of the establishment, and the current liabilities of the wife.

In case of divorce, the wife's alimony cannot exceed one-quarter of the husband's annual income from all sources. If the fault has been on the side of the wife, the husband has a right to a similar indemnity. The blameless wife or husband does not, by re-marriage, lose such indemnity.

It would be instructive to know whether Art. 646 of the Code is a dead letter, or is really enforced. It is as follows:—

"Concubinage is prohibited. When such a case comes to their knowledge, the Municipalities are bound to inform the Prefect, who, under threat of penal prosecution in case of disobedience, takes such measures as are necessary to put an end to the situation."

#### PATERNITY AND AFFILIATION.

The unmarried woman who has become *enceinte* has the right to bring against the author of her pregnancy an action to establish paternity. As a general rule, such action can only be brought before the judge of the peace during the pregnancy of the mother. If the woman and the author of her pregnancy were engaged, or if there exists a written recognition of paternity on the part of the father, the action can be brought within six weeks of the birth of the child. The rule that the action should be brought during pregnancy seems to be a very good one. After birth, there is a greater probability of the woman naming the wrong man from improper motives. In India the woman must wait till the child is born before she can make any application to the Magistrate. She has to go alone through the most trying period; the incentive to abortion is very much enhanced; and, with the lapse of time, the proof of paternity becomes more difficult.

Art. 701 contains some excellent provisions for preventing any abuse of this action, which must be dismissed:

1. If the defendant has not attained the age of sixteen years.
2. If at the time of the conception he was married, and the woman was aware of it.
3. If at such time the plaintiff was married.
4. If she had previously named some other person as the author of her pregnancy.
5. If, during the two previous years, she has followed the trade of a prostitute, or given her person to men for money:
6. If, during the same period, she has lived for a considerable time in a place of debauchery, or has frequented it in a suspicious manner.
7. If, by reason of the licentious life she leads—as, for instance, when she has already given the light of day to several natural children—or by reason of a conviction for adultery, or owing to the fact that she herself seduced the defendant to the debauchery, the plaintiff appears unworthy of redress before the courts.

The principle of legitimation of children by subsequent marriage is now part of the Federal law, and is therefore obligatory on every Canton.



There are certain restrictions on adoption. To justify it it is necessary that (1) the adoptive parents should have no legitimate children ; (2) that they should be at least sixteen years older than the adopted person : (3) that the adoptive father should be, at least, fifty years of age, and the adoptive mother at least forty. When both parents agree to adopt, and they have been married for ten years without having had any children, it is sufficient, even for the husband, that he should have completed his fortieth year.

The above appear to be some of the most salient features and characteristic provisions of the Code from a comparative point of view. As regards succession, the right to inherit *ab inta stato* has been limited to descendants, and to parents, grand-parents, etc. on the paternal side, to the exclusion of their children. Perhaps the most important departure in the Code of 1887 from that of 1854-55 is that the old rule of five parts for boys and four parts for girls has been abandoned in favour of equal division. A special vote of the people was taken in this matter, with the result that 24,872 voted for the change, and 15,997 against it. The husband and wife have been placed on the same footing as regards succession. and the restrictions on testaments, hitherto excessive, have been sensibly diminished. If a person has, intentionally and contrary to law, caused the death of the deceased, he is deprived of any right of succession, on the ground of unworthiness. The position of natural children has been much improved.

In conclusion, if a Civil Code be ever framed for India, there are not a few matters in which the Indian legislator may derive valuable information and suggestion from the Civil Code of Zurich.

H. A. D. PHILLIPS.

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### ART. III.—BEHIND THE VEIL.

#### INDEPENDENT SECTION.

On croit ce qu'on peut, non ce qu'on désire.—[RENAN.]

THE extraordinary anarchy which marks the art and literature of the present moment, is by no means confined to those branches of human effort ; and the spread of surface-culture has developed an increase of undisciplined individualism on all subjects to which the history of civilization affords no parallel. Especially is this the case in matters of Religious belief, in regard to which the widest vagaries prevail. In one direction is a great and, perhaps, a growing tendency to pure materialism : in another, we see persons bred in a system once called "Protestant" now seeking unity in uniformity and suing for recognition from the ancient Church, which their fathers abandoned and resisted. Is it not, then, time that we examined our foundations, and endeavoured to form a working hypothesis on which to base a general scheme of thought and conduct.

At the very outset of such an enquiry, we must resolve never to become the dupes of egotistic dreams. The act of Empedocles on Etna was one that a modern Coroner's jury would have found indicative of "temporary insanity ;" yet the sentiments attributed to him by Matthew Arnold are wholesome enough. Let us be on our guard against extravagant desire, no less than against the despair which is apt to be its reaction. Let us agree to view life as it is, rather than as we would have it ; and then, perhaps, we may learn a new content. Every care and every trouble is but a portion of the day's work : every success and every enjoyment may be profitably taken as an unearned windfall.

Byron, in his hit-or-miss way, said there was nothing that the world could give like what it took away ; every one must judge of this from his own experience. Many of us may be disposed to meet Byron with flat contradiction on this point, and ready to declare that the world has given him more than it has taken and far more than he feels himself to have deserved. To enter into further details, he may say, would involve intolerable egotism. 'La moi,' according to Pascal, 'est haïssable' : and most of all is it to be kept down in subjective records, where it is naturally always ready to obtrude itself. But, along with other things which the world has taken away, such a one may thankfully acknowledge to be any ardent desire for a future state of rewards and punishments. The main arguments which usually come to our knowledge



on this subject are: 1. That such belief is the basis of the Gospel of Christ; 2. That it is the general belief of man in all times and places, and in the most savage states of society.

On the first of these one cannot here say much. That the doctrine was taught by Christ may be assumed, not only from the reports of his sayings in the Gospels, but from what we know of the teaching of St. Paul. But it must not be forgotten that St. Paul was a man of very ardent character, educated as a Pharisee, and ignorant of science, as is shown in the well-known analogy of the seed in I Corinthians, xv. 36-8. As for the Saviour himself, his words—even if assumed to be correctly reported—cannot always be taken literally. The doctrine had been adopted by some of the Jews after the captivity, though the reasoning in *Ecclesiastes* (III. 19-21) shows that it was not only not believed, but strenuously opposed, by many of them. We may refer to this again under the second argument; in the meanwhile, let us be content to say that a young Galilean teacher would naturally take the popular view on such a subject, and assume it without necessarily intending any dogmatic inculcation. The Gospel ethics are quite complete, even if there is no insistence on a *post-mortem* judgment. As to its being a part of the 'Gospel,' in the sense of 'good-tidings,' that is a matter of temperament. It will be sufficient here to refer to the biographies of religious people to show that on some minds the doctrine would act with an effect the reverse of good. We are told of the comfort derivable from the feeling that the sorrows of this life will receive compensation in the glories of the next: and especially of the relief experienced by mourners when they think that those whom they have lost are only gone before, and that all will soon be united in an eternity of bliss. But these considerations take no account of the equally-implied feeling that for the majority of mankind—not alone the wicked, but the wrong-believers—the sorrows of this life are to be followed by the incalculable pains of an interminable hereafter: and especially of the horror inspired into mourners who suspect that those whom they have lost will be sent before their eyes into an eternity of bale, with a great gulf fixed between them which can never be crossed. If such are the tidings called 'good,' one cannot be surprised at their frequent rejection, or that one of the most marked features of the Old Testament is the omission of all incentives to good conduct that might be derived from the belief in the Egyptian doctrine of the Judgment of the Dead.\*

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\* It may almost be said that, in the Pentateuch, some appearance may be traced of a desire to go against Egyptian ideas and doctrines generally. The argument is worked by Warburton, if I remember right.

On the second point, one is struck with wonder that any argument in favour of the doctrine can be drawn from the belief of primitive or savage races. No doubt the belief in a life beyond the grave, if not quite universal, has been very general among such, although it has led to a great deal of certain evil and to a very dubious amount of good. The ancient peoples of Asia generally accepted some form of resurrectionary belief: and it led them to surround the dead with the things loved in life, extending to the massacre of helpless slaves and innocent female companions at the tombs of the departed chiefs. Like evils have attended the belief in Africa and the Polynesian Islands. Is it from such people that we are to receive our opinions? The more enlightened peoples of the world have never adopted the doctrine warmly or actively. Among the Greeks there was no authoritative canon of dogma on the subject, any more than among the Romans; and their general attitude of mind can only be described as poetical speculation, possibly inspired by traditional superstition derived from rude ancestors. The ancient Jews went further: it was, perhaps, an intentional rejection of Egyptian thought that led to their omission of the doctrine from the Mosaic dispensation, and confined their notions on the subject to a sort of necromantic heresy. And the author of *Ecclesiastes*—a book of never-questioned canonicity—goes beyond omission. In the *Revised Version*, he argues against the belief, and his argument is thus expressed:—

“That which befalleth the sons of men befalleth beasts; even one thing befalleth them: as the one dieth, so dieth the other: yea they have all one breath (or spirit), and man hath no pre-eminence over the beasts . . . . all go unto one place: all are of the dust and all turn to dust again. Who knoweth the spirit of man, whether (or ‘that’) it goeth upward, and the spirit of the beast, whether (or that) it goeth downward to the earth?”

And, further on, the writer explains that the dust shall “return to the earth as it was, and the spirit return to God who gave it.”

The Genesis of the doctrine in the Jewish mind is apparent. While the Jews were in captivity at Babylon, the Persians conquered that city, and took the captives into favour. The Persians, as is well known, believed in the dualism of Zoroaster, then a comparative novelty. One feature of that system was the ideal judgment which has been subsequently reproduced in the religious scheme of Islam. From that time (B.C. 538) a new element appeared in Judaism. The party of high orthodoxy—the Sadducees—still maintained the old idea of secular judgments and temporal blessings. From



that party the priesthood continued to be recruited. But the doctrine of a future existence, having been introduced, at once recommended itself to human egotism ; and the school afterwards called 'of the Pharisees' arose : according to the late Mr. King (*The Gnostics, etc.*), Pharisee is the same as *Farsi*, and means neither more nor less than 'Persian.' In the middle of the 2nd century B.C., the doctrine had taken firm hold of the popular imagination. The book *Ecclesiastes*, with its reasoning on the other side, is, perhaps, of that period. In support of the doctrine we have the remarkable contemporaneous passage in *Maccabees*, which probably did much to preserve the canonicity of the Apocrypha at the Council of Trent. It is in II Mac., xii. 43-5, where we are told of Judas making a 'sin-offering' to the memory of his slaughtered followers : 'in that he was mindful of the resurrection : for, if he had not hoped that they that were slain should have risen again, it had been superfluous and vain to pray for the dead.' At that time the question was evidently debated among the Jews.\*

Modern non-Catholic Christianity has given up prayer for the dead. But it still clings to the ideal of the 'resurrection of the body,' when the judgment will take place,—those that have done good going to a blessed immortality, those who have done ill to everlasting fire. Jesus favours this view, in some at least of his recorded teachings. But there is one, if no more, of the words attributed to Him on the subject which is at variance with it, and indeed has occasionally formed a cause of doubt and controversy. He tells the penitent thief on the cross : 'This day shalt thou be with me in Paradise.' *This day* seems to exclude the doctrine of The Day of Judgment—not to say that of corporeal resurrection. Again we are told, by St. Paul and his followers in later times, that the resurrection of Christ is an earnest and antetype of our own. But in what way? How can the revival of a semi-divine body, that had lain one night in a rocky cavern and had 'known no corruption,' be any representation of the revival of our bodies after they have resolved into their elements and those elements been redistributed into countless new combinations?

The statement of *Ecclesiastes* is far nearer to the teaching of modern science. It is now regarded as an absolute truth that nothing can perish, and that the elements of a human body follow the same destiny as those of one of the lower animals, with which, indeed, they are perfectly interchangeable. We may, with complete accuracy, imagine ourselves tracing

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\* See Acts iv. 1, 2 and v. 17 for indications of this conflict down to the rise of Christianity.

the noble dust of Alexander till we behold it stopping a bung-hole. Umar Khayyám has pointed out this truth in his curious vein of blended tenderness and wisdom :—

‘ Long before thee and me were night and morn,  
For some great end the sky is round us borne ;  
Upon this dust, ah ! step with gentle foot,  
Some beauty’s eye-ball here may lie forlorn.’

‘ This cup once loved like me a lovely girl,  
And sighed, entangled in a perfumed curl ;  
This handle that you see upon its neck,  
Once wound itself about a neck of pearl.’

And if the material elements are thus liable to endless redistribution, may it—one may almost ask, must it not—be the same with whatever we may contain of a spiritual nature? From the great source of Being it came ; when no longer associated with the crumbling frame of matter, it should be recalled into that eternal magazine. ‘ Then shall the dust return to the earth as it was, and the spirit shall return to God that gave it ;’ that is still the most enlightened and irrefragable sentence on this great enquiry.

If it shall be asked, what sanction is left for the laws of virtue, may we not reply, with the old adage, that ‘ Virtue is its own reward ?’ The late Canon Kingsley was not a systematic thinker ; and he handicapped his early freedom by accepting position and preferment from the Anglican Church. But no one of my time can forget the impression that was produced by the boldness of his youthful appeals on this subject. Another beautiful mind was led to insist on these things even to extravagance. The late Cotter Morison, in whose untimely death his friends sustained an irreparable loss, was certainly not justified in implying that the ‘ Service of Man ’ was at all incompatible with that of the Christian Deity. The Epistle of St. James, the brother of our Lord, is there to answer him, with its entirely humanitarian description of ‘ true religion.’ Nevertheless, in showing that the belief in a *post-mortem* identity and all its possibilities was not incompatible with every kind of misery and evil-doing, Morison did a good work. On the other hand, from some of the Old Testament saints, from Sakia Muni and some of the Hindu reformers, on through Cicero, Epictetus, M. Aurelius, and so down to Spinoza, and, later still, such a man as our Darwin, we have an unbroken catena of men who have loved virtue for her own sake, and without the egotistic motives of hope and fear looking beyond the grave.

Such is a very concise statement of the sources from which one may desire strength and health in matters of the spirit, when one has got rid of the fear, distrust and practical infidelity of childhood ; and we do not hesitate to indicate to our own



children the same path of contented freedom. Is it meant by this that they should be asked to deny a new life after death, or throw off all belief in Christ? By no means: on the contrary, they should be encouraged to believe firmly that there is, at the heart of our Teutonic civilisation that is now overspreading a large portion of the globe, a principle which we owe to Jesus. It is not true that modern civilisation is *entirely* due to Christianity: German virtue and Roman law and Greek art, are all there: The civilisation of the Latin races has taken up elements that ours has not; and there are, on the other hand, things of some importance in Christianity that no modern race has adopted. Nevertheless the central doctrine of Charity, or, in terms of modern science—Altruism, is peculiar to the best aspects of modern civilisation, and is probably due to Christ alone. This is what one would feebly, and with very partial success, endeavour to follow; this it is, above all, that one would earnestly commend to any who read these words: Love your neighbour as yourself; make your own desires and interest the measure of what you do to others; lay down your life for those who depend on you; lose the whole world rather than your own soul. In all these things you will be followers of Jesus. Acting in that spirit you may safely leave the rest to the Divine mercy, and in the words of the American poet—

“ Approach your end

Like one who wraps the drapery of his couch

Around him, and lies down to pleasant dreams.”

The dreams may not come after you have gone to sleep; but their anticipation will have charmed your waking hours, and beautified the approach of the long slumber.

In whatever way this great question may be decided, there seems good reason to think that serious thinkers all over Christendom are coming to the parting of the ways. England, which has always taken a forward place in earnest speculation, has seldom been wanting in minds to which the divergence between religious authority and religious freedom has been strongly present. In the first effervescence of the Reformation, indeed, this was for a while obscured. When men began to abandon the Church as the ‘Rule of Faith,’ they were at first led to follow the Continental Protestants in believing that such a rule could be found in the Bible. And it is remarkable that when Chillingworth had returned from the Roman obedience, and taken up what would be now called the ‘Broad Church’ position, the book which he produced as the vindication of the step professed to be founded on the Bible. A bolder tone came in after Hobbes and Locke. The spirit of literary criticism

was applied to the sacred writings of Jews and Christians\* by Toland (born a Papist) and Tindal and Gibbon, both of whom took Rome in the course of their pilgrimage. In our own times, we have seen cases like those of the brothers Froude, and (still stronger instance) the brothers Newman. In such men we see the insufficiency of non Romish High Church principles to satisfy minds of exceptional earnestness and sincerity. If *Authority* be needed for the foundation of the temple, such minds will only be content when they have made the son of God their corner-stone. If it appear that the Church, which traces its apostolic succession to Him, and bears the credential of his perpetual presence, has contradicted itself on points of doctrine—as Chillingworth argues—and has even led to misconduct in matters of practice, then they will find themselves left to the exercise of private judgment. If the Church of Rome has gone wrong, it will seem to them vain to seek infallibility in weaker or less accredited organisations; whether in the Greek Church, or among the 'Old Catholics,' or any other body which, while professing a common origin with Rome, has diverged from her decisions. It seems no rash forecast to predict that, before another half century has elapsed, all well-educated men will be either Papists or Agnostics. For woman, indeed, and working-men—unless their education shall be greatly altered, Anglicanism and Methodism may still provide sufficient spiritual food; nor will this, perhaps, greatly signify, so long as the spirit of toleration continues to prevail.

A dignified Anglican clergyman was once heard to say—in a moment of private confidence—that he regarded all dogma as a purely human invention, varying according to place or time; he therefore considered that the duty of the clergy was to use the dogma of their own immediate Church as the channel through which to communicate the essential doctrine of Jesus. And, when asked, what that doctrine might be? he answered—"Love."

For those who adopt the conventional view, that the religion which they profess was the subject of a direct Divine revelation, this question may have little or no apparent interest. But those who accept the modern doctrine of 'evolution' are bound to consider it a step in the spiritual education of mankind, growing out of earlier and ruder conditions; and slowly moving towards others, of a kind not yet made clear. They will see in Jesus a mild ascetic, of the type of the Indian Buddha, whose aim, like that of his brother James, was the creation of a communistic society in Palestine for mutual aid in physical and moral welfare. Then came the Cilician Pharisee, Saul, or Paulus, a

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\* *Ta Biblia*—"The Books," not The book.



man of eager and cultivated intellect who captured the movement, and, by transplanting it to Rome, gave it an ecumenical character. Whether Peter ever followed him thither, has been much debated, but forms a barren controversy.\* According to the arrangement recorded by Paul (Galat. II, 9), it was he that was sent to the Gentiles, while Peter and John were to address their preaching to the Jews; the Pauline Epistles show how his part of the mission was taken in hand. The sonship of Christ, the atonement for the transgression of Adam, with the doctrine of a future state of rewards and punishments, were impressed upon the Western world with some references to the writings and opinions of their own writers. Then the brotherhood of all men, together with the beauty of holiness, formed an attractive recommendation of those doctrines with a community so deeply smitten by worldliness, cruelty, and sensual impurity as the slave-holding, gladiator-keeping Romans; and, still more, with their victims. From the fall of Jerusalem (A.D. 70) to the coming of Constantine (A.D. 313) the struggle went on:—

On that hard Pagan world disgust  
And secret loathing fell;  
Deep weariness and sated lust  
Made human life a hell.

It has been observed by Pr  sens   (vide *Chamber's Encyclop  dia*, III, 219) that, when Christianity was established by Constantine, he "granted it burdensome protection, though it still retained its generous sap." These few words are a concise statement of the position. A system of love, purity and brave endurance of persecution could not but suffer deterioration when it suddenly acquired all the power of the State. A period of dogmatic dictation set in; the doctrine of the Trinity took form; the Arians were denounced; the Church itself became the persecutor. The fall of the Western Empire left the central seat of authority vacant for the Pope; and the civilised world learned to identify Christianity with the system of the Roman obedience. This assumption affects some of the most powerful apologetic works of later times, especially the eloquent pleadings of Chateaubriand. Both he and Pascal, before him, argue as if Romanism were the only Christianity. This is, nevertheless, only fallacious as polemic; for all who are not absolutely hostile it has a certain propriety and more than a grain of truth.

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\* The burden of proof is on those who assert, not on those who deny. But see Basnage (*Hist. de l'Eglise*, 44), where it is said that the first positive assertion is that of Lactantius, who died A. D. 325. The statements of Jerome are unsupported, and in some part improbable (as that Peter came to Rome in A. D. 42).

For the Reformation, whatever symptoms it may suggest of future emancipation and religious progress, is not, as Protestant champions contend, "an evolution of Christian thought which is a return to its original." Such language (also taken from *Préssensée*) shows a complete misconception of the meaning of Evolution, which, as defined by Herbert Spencer, involves a progress from incoherent heterogeneousness to definite homogeneousness and dissipation of force until ultimate dissolution sets in. Being so, Evolution can never "return to its source ;" that is the progress of Dissolution.

Now, there is nothing in the usual Protestant arguments to show that there was not in the Primitive Church this vital germ of latent evolutionary capacity : nor is there any evidence that its evolution will not end in decay. Still less is there any ground for assuming that "Evangelical Christianity" will take the place of Catholicism. The utmost that can be made out is that the Reformation was one step in the process of development.

When the Catholic Church was rejected, by the nations of the North, as a final authority in matters of faith, a necessity was still felt for something to take its place. The Reformers naturally found their "Rule of faith" in the collection of books which was then held to be "The Word of God." But a time came when acute thinkers declared that there was, in truth, no such Oracle, and that "The Bible" was only a title inaccurately rendering a Greek phrase signifying "The books." These were also discovered to be by no means uniform in character, but almost as various as they were many. A suspicion ensued, which was gradually affirmed by criticism, to the effect that the entire collection contained the word of Man about God, rather than the word of God about Man ; and that the expression varied from age to age.

Thus, then, the pilgrims towards the hidden shrine have had three different visions at successive stages of their progress. First, the message of the Gospel to the Gentiles ; Second, the establishment of spiritual authority at Rome ; Third, the assertion of private judgment ; Paul, Hildebrand, Chillingworth. What is to be the next step, who can say ? All the forms here mentioned, however successive, are still in contemporaneous existence : the Primitive Gospel, more or less adapted to modern needs ; the elaborate orthodoxy of the Roman Church ; the rationalising efforts of educated Protestantism ; and bastard systems are also found which mingle one of these with another, like the Anglican High-Church.

Nevertheless, in all will be found a common property that cannot be lost as long as European civilisation retains a positive character, whether in the Old or New World. In what-



ever form, and from whatever point we regard it, Christianity has created the conscience of civilised mankind, and has laid down the law of Love. Wherever, therefore, human beings are held together in unity of spirit, in the bond of peace and in righteousness of life ; wherever altruism is made a guiding principle and an idea of Deity is revered, there we can still allow men to profess and call themselves Christians. This is the true teaching of Jesus of Nazareth ; the pattern of faith and action that was first set in the days of the early Cæsars upon the sacred fields of Galilee.\*

H G. KEENE.

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\* *Book of Common Prayer* : supplication for "all sorts and conditions of men." The tone of this prayer appears to show that the founders of the Anglican rite never contemplated *uniformity* as a condition of Christian fellowship: the aspiration is that "all who profess and call themselves Christians may hold the faith in *unity of spirit*." This seems to be an almost complete answer to the complaints of dissidence ; except, indeed, in the mouths of Romanists.

The Greek Church is not here mentioned separately, being taken as a mere variant of Catholicism, professed by the less civilised races of Christendom, but belonging essentially to the class of authoritative creeds which seek unity in uniformity.

ART. IV.—EKNATH, A RELIGIOUS TEACHER  
OF THE DECCAN.

EKNATH was born in the year 1548 of the Christian era, at Paithan, or Protisthan-Poori. His father, whose name was Soorya Narayana, breathed his last while Eknath was still in his infancy ; and the duty of supporting and educating the child, therefore, devolved on his grandfather, whose name was Chakrapani.

Eknath was of a quiet disposition, a trait in his character which manifested itself even in his early days. As a boy, his appearance was very thoughtful ; and he was scarcely ever seen playing with his companions like other children. His amusement was of a special nature. He used to go from time to time to the banks of the Godavery, where he was seen worshipping pieces of stone, with flowers which he plucked from the trees by the river side. He was also heard muttering words, not fully audible, as if offering prayers to the deities, and would recite texts from the Puranas in imitation of *Hari-dases* (religious teachers).

Chakrapani now thought it time to educate his grandson ; and, at first, he undertook this work himself. Eknath was very intelligent, and, having a retentive memory, soon showed an amount of progress which was scarcely to be expected from a boy of his age. Chakrapani was much pleased with his grandson, and determined to educate him in the Vedic lore. With this object in view, he performed the boy's *Upabit* ceremony in the sixth year of his age, and placed him in charge of a learned Brahmin to teach him the Vedas. The sharp intellect he possessed, enabled Eknath to make rapid progress in his studies ; and, in addition to the Vedas, he learnt a good deal of the Puranas, and at his leisure used to attend *kotha* and *kirtan*, and thus became acquainted with many of the incidents narrated in those religious books. He took a great pleasure in reading the lives of great men ; and it became his earnest endeavour to imitate those traits in their character which exalted them. But how to attain a knowledge of God became the great yearning of his soul ; and, in order to satisfy it, he used to go to the religious teachers of Paithan to make enquiries on the subject. Sometimes, he is said to have put to the Pundits such difficult questions that they were unable to give proper answers to them. But the object of Eknath was to gain knowledge and not to give trouble to the Pundits ; he made enquiries in a calm spirit, and every one was convinced of the sincerity of his



purpose ; so that, instead of being annoyed, the Pundits were pleased with him.

Eknath was much attached to his grandfather and grandmother, and obeyed their orders with great alacrity, attending them at the time of their sickness, and ministering to their wants. He paid due veneration to elderly persons ; was affectionate to his companions, and bore with patience the taunts and abuse of the ill-disposed boys of the neighbourhood.

The information he received from the Pundits of Paithan did not satisfy him, and he would frequent temples and lonely places from time to time for the purposes of contemplation. On a certain occasion, when he was thinking of the Divine Being in a temple dedicated to Shiva, he heard a voice saying : " There is a great man in Deoghur, named Jonardun Punth. Take him for your religious guide, and you will gain your object." These words took Eknath by surprise ; and he was at a loss to know whence the voice came. He had read in the Puranas of the Almighty Being having vouchsafed their wishes to his devotees on various occasions, and he concluded that it was the voice of God. He thought much about this Divine command, and was seized with a desire to carry it out. But, when he came to think of the difficulties that confronted him, he knew not what to do. His grandfather and grandmother were old and indigent, and were dependent on him in many ways. Moreover, they were dotingly attached to him, and he knew that his absence would be greatly felt by them. Then, he was only eight years old, and it was no ordinary task for such a child to undertake a journey to Deoghur. But, he considered it to be his paramount duty to obey God, and he, therefore, resolved to go there. It was necessary for him to obtain some information about the route to Deoghur, and he went to a *Pouranik*, who gave him particulars about it. Eknath told the *Pouranik* that he was going to see Jonardun Punth.

Deoghur was forty miles from Paithan, and the road to it was not a good one ; but nothing could prevent the intrepid boy from carrying out his resolution. During his journey, he travelled in the day time, and rested at night, sleeping beneath some spreading tree, with a stone for his pillow. Having no money with him, he was compelled to satisfy his hunger with fruits and roots. His hardships were great, but he bore them with patience. When and how to see the saintly form of Jonardun Punth was his one prevailing thought. It took him five days to reach Dowlatabad.\* In the meantime Chakrapani and his wife were filled with anxiety by the absence, and expecting the return of Eknath. They

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\* Another name for Deoghur.

at first thought he had gone to visit some temple at a little distance from Paithan, and would come back shortly : but, as day after day passed, they became alarmed. Chakrapani then set about making enquiries in the neighbourhood. He went to the Pundit whom Eknath was in the habit of visiting. But no one could tell him anything about the boy. The neighbours of Chakrapani were much attached to Eknath, and they also were filled with anxiety on his account, and made enquiries about him, going to temples, river banks and hill caves in quest of him ; but no trace of him could be found. The Pouranik from whom Eknath had made enquiries about the route to Deoghur, was the only person who could have given information about him, but unfortunately he had left Paithan for some other place.

After reaching Dowlatabad, Eknath made enquiries about Jonardun Punth's residence. Punthjee was a famous man, and Eknath had no difficulty in obtaining the necessary information. But here we should say something about this Jonardun Punth. Punthjee was a Brahmin of the Deshasta community, and a resident of Challisgáon.\* He was a man of great ability and many accomplishments, and was famous for his learning and wisdom. He was a good councillor in the cabinet and a brave general in the field. A Mahomedan King ruled Dowlatabad at that time, and when Eknath reached Dowlatabad, Jonardun Punth was his Prime Minister. On special occasions he was required to take the field also. But Jonardun Punth was also a great devotee, and in the midst of his onerous and multifarious business he did not forget his religious duties. He devoted every Thursday wholly to the worship of Duttatreya. On that day he separated himself entirely from secular affairs ; and, out of reverence to him, all the Courts and offices of the Kingdom used to be closed. On other days, after finishing his work, he passed his time in reading the *Shastras*, carrying on religious conversations and worshipping God. He was a great Yogee, and he used to pass a portion of his time every day in communion with his Maker.

Eknath came to the house of Jonardun Punth, and, standing at the door, sent intimation of his arrival to him through a servant. Jonardun Punth came out of his room, and was going to see Eknath, when the latter entered the house and prostrated himself before him. Jonardun Punth took the boy by the hand, and told him to take some rest. He spoke to him kindly, and asked what had induced him to come to him. Eknath said that his object was to study the *Shastras*, to obtain a knowledge of God, and to see that Great

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\* There is a station of the G. I. P. Railway at this place.



Being. He told him of the voice of God he had heard in the temple of Shiva, and how that voice had induced him to come to him. The words of Eknath pleased Jonardun Punth greatly. He was astonished to see a boy imbued with so much love to God, and began to instruct him in the *Shastras*, and Eknath became his devoted pupil, and began to serve his spiritual guide in the manner that was in vogue in ancient times. He used to rise early in the morning, and, after washing himself, clean the temple attached to Jonardun Punth's house, and the room of his spiritual guide. After this, he used to devote himself to the service of Jonardun Punth. This service consisted of arrangements for washing and bathing, as well as for the worship of God. After washing the clothes left by Jonardun Punth after bathing, he would go and fetch flowers and leaves of the Bel tree, and place them in the temple with other things required for the worship of the tutelar deity.

After performing these services, he studied the *Shastras*, in which he made considerable progress. Besides the Vedas and the Upanishads, he studied the learned works of the great saint Dnyanadeva. Whilst studying, he requested his spiritual guide to explain to him intricate matters, and the explanations he received from Jonardun Punth satisfied him. Jonardun Punth became greatly pleased with Eknath, and used to take him with him wherever he went. In addition to the duties he performed in connection with household affairs, Eknath assisted Jonardun Punth in his work relating to the affairs of the State, and it is said that on a certain occasion, when Jonardun Punth was engaged in *yoga*, Eknath fought against an army that had attacked Dowlatabad, and succeeded in driving it away. Eknath passed twelve years with Jonardun Punth, who finally taught him how to practise *yoga* and enlightened him with *Brohmo Dnyan*.

Soon afterwards Jonardun Punth went on a pilgrimage to some of the sacred places, and took Eknath with him. Among other places, they visited Nasik and Trimback. They passed some time at Panchabati in Nasik, where, at the request of Jonardun Punth, Eknath wrote a commentary on the *Sremad Bhagbat*.

They then returned to Dowlatabad. After a time Jonardun Punth told Eknath that, as he had already become learned in the *Shastras* and received divine knowledge, it was now necessary for him to go on pilgrimage in order to complete his knowledge. The sight of the wonderful works of nature would impress him with the glory and might of God; conversation with saints who resort to places of pilgrimage would perfect his knowledge, and an insight into the manners and customs of

different peoples would give him experience, which would be of great benefit to him. Jonardun Punth went on to tell Eknath that, after he had finished his pilgrimage, he should return to his native place and lead a family life. It was not necessary, he said, that a man should lead the life of an anchorite. One who is religiously inclined can pass his time in worshipping God and serving his fellow-men in the midst of worldly affairs. Jonardun Punth impressed this on the mind of Eknath, and concluded by saying that a man had several duties to perform, which he could hardly do from his place of seclusion. Having received these instructions, Eknath bowed down before Jonardun Punth, and, after receiving his blessing, took leave of him.

Eknath's grandfather and grandmother passed thirteen years in great distress. Then they came to know from the Pundit from whom Eknath received information about the route to Dowlatabad, that he had gone to Jonardun Punth to study the *Shastras* and receive instruction from him. This news filled their minds with a desire to see their grandson again. But there was an obstacle in the way ; Chakrapani was too old to undertake a journey to Dowlatabad, and he knew not what step to take to bring Eknath back. He could have sent a man with a letter to him, but he had no money to pay him. He explained his difficulties to the Pundit already mentioned, and the distressed condition of the old man affected him so much that he himself undertook to go to Dowlatabad.

When the Pundit arrived at Dowlatabad and saw Jonardun Punth, he related to that great man the object of his visit, and explained to him the pitiable condition in which Chakrapani and his wife had been placed in the absence of Eknath. Jonardun Punth was pained to hear this, and informed the Pundit that Eknath, after studying the *Shastras* and obtaining divine knowledge, had gone on pilgrimage, and that, after finishing it, he would return to his native place, so that Eknath's grandfather and grandmother need not be anxious on his account. The Pundit rejoined that it would take Eknath some years to visit all the places of pilgrimage in India, and it was desirable to take some steps to bring him back. Chakrapani and his wife, the Pundit continued, were in the utmost distress, and it was a question whether they would live till their grandson had completed his pilgrimage, so that his speedy return was necessary. On hearing this, Jonardun Punth informed him that Eknath, after visiting the sacred places of Northern India, must pass through Paithan on his way to Southern India, and that he would arrange to stop his further progress. So saying, Jonardun Punth wrote two letters, one addressed to Eknath and the other to Chakra-



pani, and handed them over to the Pundit. With regard to the former, Jonardun Punth said that enquiries should be made about Eknath, and the letter handed over to him at Paithan. The Pundit then expressed his gratefulness to Punthjee, and took leave of him.

On his return to Paithan, the Pundit handed over the two letters to Chakrapani, and related to him the substance of his conversation with Jonardun Punth. Chakrapani read the letter to his address. It contained an account of Eknath's progress, together with words of consolation to him, and a request that he would hand over the other letter to Eknath, which would stop his further progress. Chakrapani was overjoyed to hear all that Jonardun Punth had to relate of the progress made by Eknath in the path of religion, and the hope of seeing him soon buoyed up his spirits.

After leaving Dowlatabad, Eknath went towards the north. He first visited the sacred river Nerbudda, and bathed in it. The sight of the famous Nerbudda falls, the marble rocks on its banks, and the romantic hill, on the summit of which were structures containing images of gods and goddesses made of stone, produced a great impression on him. The forests skirting the Nerbudda brought to his mind the holy associations connected with the devotion of the sages of old, who passed their time in these sylvan spots in communion with their Maker. After this, Eknath visited Chitrakoot. The stream Paishanni, flowing through it, and the hills with which it is studded, reminded him of the sojourn of Ram Chandra, Seeta Devi and Lakshman in those romantic places, and of the holy lives led by them, and the thought of the good deeds of these personages stirred noble sentiments in his mind. He now appreciated fully the wise advice given him by Jonardun Punth to lead a family life, and became convinced that, by relinquishing the world, a man fails in the performance of important duties which he is bound to discharge. After leaving Chitrakoot, he visited, one after another, Prayaga (Allahabad), Kashi (Benares), Ayodhia (Oudh), Muthoor, Brindabun, Haridwar and the sacred places on the Himalayan range, such as Kedar and Budrinath. He then came southward, and, after seeing Dwarka, Joonaghur and Dakoor, made his way towards Paithan. Wherever he halted, it was his wont to stop in some temple, or *chatram* (rest house), on the outskirts of the place; on arriving at Paithan, he took up his abode in the very temple in which he had heard the voice of God.

There was no arrangement in the temple for supplying food to strangers, and it was, therefore, necessary for Eknath to go to the village for alms. It so happened that, at the

same time, Chakrapani, after visiting a temple, was returning home ; but, feeling tired, he sat down to rest in front of one of the houses of the place ; and, while he was there, who should come out of the house but Eknath. He was in the garb of a hermit, and Chakrapani took him for a *Yogi*. But, on looking at him more closely, he was struck with his resemblance to Eknath, and called him by his name. Eknath had not intended to visit his grandfather and grandmother, although he had thought of making enquiries about them. When coming out of the house, he had, in fact, recognised Chakrapani, but he did not speak to him. But, when he heard the voice of Chakrapani, he could no longer restrain himself, but bowed down before him, and related to him all that had happened to him during the past thirteen years. It gave Chakrapani much pleasure to hear from Eknath an account of his religious life, and he blessed him heartily. Chakrapani then asked Eknath whether it was right on his part to leave him and his wife in this their distressed condition. Eknath gave no reply, but wept bitterly. He then confessed that he was the cause of all their troubles, and asked Chakrapani's pardon for what had happened. Chakrapani forgave him, but he begged him not to continue his pilgrimage. To this Eknath replied with all humility that it was the order of his spiritual guide that he should first visit all the places of pilgrimage in India, and then return to his native place and lead a family life. On hearing this, Chakrapani handed him the letter of Jonardun Punth that was with him. The purport of this letter was that it was Eknath's first duty to minister to the wants of his grandfather and grandmother, who in their old age and distressed condition sorely needed his help ; that to serve them was of greater merit than the performance of pilgrimage, and that, after reading this letter, he should cut short his journey, and place himself at the service of Chakrapani and his wife. Eknath obeyed the injunctions of Jonardun Punth.

After serving his grandfather and grandmother to the best of his power, he felt that it was his duty to do good to the people of Paithan. So, on the spot where he had met his grandfather again, he built a small room to which he used to resort daily, in order to explain the *Shastras* to the people, and to perform *Kirtun* and sing hymns ; and there the people used to assemble and listen to him, and the ability with which he expounded the *Shastras*, and the noble sentiments which his *Kirtun* and hymns breathed, exercised a great influence over them. In time, Eknath's audience increased to such an extent that the erection of a larger structure became necessary to accommodate it, and the people of Paithan raised a fund from



among themselves, and built a temple with adjuncts to it sufficient to meet all requirements. This temple came to be known as *Nath-mandir*. The fame of Eknath as a good Haridas spread abroad, people from distant places came to hear him, and the presents made him by the devotees enabled him to support himself and his family. At this time a respectable gentleman of Bijapur, hearing of his reputation and the religious life led by him, offered to give his daughter in marriage to him, and, the matter having been settled with Chakrapani, the nuptial ceremonies were duly performed.

Eknath lived happily for some years ; but no one is destined to enjoy happiness unalloyed in this world. Calamities at length overtook him. He lost his grandfather and grandmother one after another. These events afflicted Eknath greatly, but he consoled himself with the reflection that the visitations of Providence are intended for the good of mankind. After this, he heard of the death of his spiritual guide. During the life-time of that great man, he had shown his gratitude to him for the great benefits he had obtained from him, and after his death, he took steps to keep his memory alive. With this view, he organised a religious gathering on the anniversary of Jonardun Punth's departure from this life.

Eknath was accustomed to rise very early in the morning. After bathing and worshipping, he used to read the Puranas. His next duty was to attend to the strangers who came to his house, and whose wants he supplied to the best of his power. In the afternoon, he used to go to the temple, in order to expound the *Shastras* to the people, and remained there till evening, when he returned home ; but shortly after offering his evening prayers to God he would come back to the temple. At this time, Eknath used to perform *Kirtun*. In this he displayed his oratorical as well as poetical powers. Taking some text of the *Shastras* for the subject of his discourse, he would explain it in a lucid manner, illustrating it with incidents and stories bearing on the subject. His style was characterised by ease and sweetness, and he had the gift of extemporising in verse. His religious discourses kept his audience spell-bound. He soon became famous as an expounder of the *Shastras* and an orator, and people from distant places came to Paithan to hear him. In time, the audience became so large that even the spacious temple would not hold them, and the people raised a fresh fund and made additions to it. Then Eknath's labours increased greatly : but, fortunately, a relation of his named Oordhun became his disciple at this time, and assisted him with great devotion.

The famous saint Dnyanadeva (জ্ঞানদেব) had published a Mahratti version of the Bhagabat Geeta, with his notes on the

text, which goes by the name of Dnyaneshwari. The book is an excellent one, and Eknath took great pleasure in reading it; but its style is so obscure that people find great difficulty in understanding it. With the view of making it more popular, Eknath wrote a commentary on it, explaining the difficult passages. His efforts met with success, and the people read the work with eagerness, and derived much advantage from it. The religious instruction which Eknath gave produced a marvellous effect on the inhabitants of Paithan; and many persons of evil habits became reformed and devoted themselves to the worship of God.

Whilst leading men into the path of rectitude by his religious discourses in the temple, Eknath was not unmindful of the poverty of the people around him, and it became his inmost endeavour to give them relief. The presents he received from his hearers in the temple always kept him in funds, and, after defraying his necessary expenses, he used to spend whatever was left in affording relief to the needy. When necessary, he attended sick persons. People resorted to his house for help in large numbers, and he used to assist them to the best of his power. As has already been mentioned, it was his daily duty to feed those who came to him. In this he made no distinction between rich and poor, between a Brahmin and a Shudra, but served all with the same sort of food. A special trait in Eknath's character was that he acted up to the principles he advocated. His instructions to the people were:—"A Brahmin who is illiterate and of dissolute character should not be given the respect due to a Brahmin properly so called, but if a man belonging to a lower class shows rectitude of conduct, he should be venerated. If a Brahmin of low character and a helpless person come for help at the same time, preference should be given to the latter." Eknath was of a mild disposition. He was careful to do nothing that he thought likely to wound the feelings of others. He was also forbearing, and bore the ills of life with equanimity.

Though the inhabitants of Paithan greatly revered him, there were certain Brahmins who conceived malicious feelings towards him, and some of them even went the length of injuring him. These Brahmins used to earn money by performing *Kirtun*: but whenever Eknath's performance took place, no one went to hear them. There was another cause of their enmity towards Eknath. The teachings of Eknath and the good example set by him succeeded in reforming many persons of vile character. The Brahmins used to earn money by performing expiatory ceremonies for those who committed heinous sins; but when these men forsook their evil ways,



expiatory rites became unnecessary in their case, so that their income was reduced. They began to make false charges against him in order to injure his reputation, and they also applied low epithets to him in the course of conversation; but nothing ruffled the temper of Eknath. He gave no response to these persecutors. Far from retaliating the wrongs done him, he continued to pay the Brahmins the respect due to them as Pundits. This noble conduct shamed the Brahmins, and they ceased to injure him.

Eknath had a marvellous power of bearing with patience the wrongs done him by others. In illustration of this, it is narrated that, on a certain occasion, he was returning from the Godavery after bathing, when a Mahomedan spat on him. Eknath said nothing, but quietly went back to the river to bathe. When he returned, the Mahomedan again treated him in the same manner. Eknath went to the Godavery a second time and bathed. Again he received the same treatment from the Mahomedan. In this manner the affair went on throughout the whole day. It is said that in the evening the Mahomedan became a mute, and this visitation of God convinced him that Eknath was a man favored of Heaven. He then repented of what he had done, and asked the pardon of Eknath by signs, whereupon Eknath blessed the man, and he began to speak.

The fame of Eknath as a great scholar and a writer of note spread abroad, so that even the Pundits of Benares came to hear of it. On a certain occasion, a famous Pundit of that place sent to Eknath for an explanation of some verses of a puzzling nature composed by him. Eknath, after explaining them in four different ways, sent back the verses to the Pundit. The Pundit, being satisfied with Eknath's explanations, showed them to other Pundits, who were loud in his praise, and one of them showed his appreciation of his merits by coming to Paithan to see him.

Brahmins of questionable character never received from him the respect which was due to them as Brahmins: but, whilst viewing their conduct with displeasure, he showed no mark of hatred towards them. It was his inmost endeavour to lead them to the path of rectitude. In fine, he sought the welfare of all, irrespective of their caste, their position in life, and their character. He did not consider himself to have done his duty by simply preaching the truths of religion and giving instructions within the precincts of the temple, but used to go to the houses of the people to give them lessons in morality and religion. By this means, he succeeded in reclaiming persons of bad character, and inducing good men to advance in the path of progress.

Ekknath adopted a peculiar method by which he put to shame those who tried to injure him. It is related that, on a certain occasion a thief came to his house to rob him. Ekknath became aware of his presence, but remained quiet, while the thief took one thing after another. When he was about to go away, Ekknath accosted him, telling him that there were some more valuable things which would be of great benefit to him, and that he should not leave them behind; and his words so shamed the thief that he not only restored what he had taken, but abandoned his evil habit.

The following is Ekknath's portraiture of a saint: A garland of *Roodraksha* may or may not adorn the neck of a saint, but he must be of a pure heart, and he should speak to others in a mild tone. He may not have twisted hair on his head, but he must possess self-knowledge, and be a man of large experience. His body may not be covered with ashes, but he must not turn his eyes towards women with a bad motive. A saint should not be covetous. He should not speak ill of others. There are many who give good instructions to others, but do not act up to the same themselves. That man is really a saint who shows by his own example what he preaches to others.

Ekknath showed conclusively that a man can be of more service by living in the midst of worldly affairs than by relinquishing them. He was blessed with two daughters and a son, the latter of whom made considerable progress in knowledge, and became known as Hari Pundit.

There are some striking incidents in the life of Ekknath. Whatever may be thought of the miraculous events, with which they are associated, they show his reputation for magnanimity. It is related that, on the occasion of the anniversary of his father's death, he made arrangements to entertain a number of Brahmins. The food was skilfully prepared, and its odours were wafted by the wind outside the house. Some men belonging to the lowest class of Hindus who happened to be passing by, smelt the odour of the viands and remarked to one another on the delicacies that had been prepared and their ill fortune in being unable to enjoy them. Their remarks reaching the ears of Ekknath, he brought them into his house, and fed them sumptuously. Arrangements were afterwards made to prepare fresh dishes for the entertainment of the Brahmins who had been invited; but, when the Brahmins came to know of this, they felt themselves insulted, and refused to come to the feast. Ekknath was greatly mortified, but said nothing. While he was still brooding over the matter, he observed some Brahmins entering his house. Though they were strangers to him, he gave them a hearty re-



ception, and fed them sumptuously. After the repast was over, the Brahmins took leave of him, much gratified with the way they had been entertained. The Brahmins of the neighbourhood who had refused to partake of Eknath's feast saw them coming out, and, coming close to them, were astonished to find that they were no other than their deceased ancestors and neighbours. This strange occurrence brought them to their senses, and they became convinced that he was a man favoured of Heaven, and came to him and obtained his pardon for what they had done.

There was a certain devotee named Rama in Paithan, who, though he was a Shudra, used to go with his wife to the temple daily to hear Eknath. Eknath's teachings regarding caste induced Rama to think that he might invite him to dine with him. Eknath accepted the invitation, and went to his house at the appointed time. On hearing of this, some Brahmins of the neighbourhood went to the house of Rama, and saw Eknath dining there. On their way back, they met some other Brahmins, and told them what they had seen; but as the latter had just seen Eknath at his own house, they were filled with amazement. All the Brahmins then repaired together to the house of Eknath, and saw him there talking to his disciples. They then returned to Rama's house, and, to their astonishment found him there also chewing betel-nuts. When they attempted to speak to Eknath, he disappeared, and no one could see where he went.

Another tradition is that a Brahmin of Paithan deposited a piece of gold with Eknath, and went to a distance on business. Eknath, thinking the temple a secure place, kept the gold there: but it so happened that it got thrown into the river along with the flowers offered to the deity. On his return to Paithan, the Brahmin went to Eknath, and asked him for the gold. Eknath searched carefully, but could not find it. The Brahmin thereupon became enraged, and abused Eknath, who bore everything quietly, and, when his temper had somewhat abated, requested him in gentle tones to accompany him to the river. The Brahmin complied, and both went to the Godavery. On reaching the river, Eknath picked up some stones from its bed, and holding out his hand, told the Brahmin to take his property from it. The Brahmin thought Eknath was joking with him, and treated his words with contempt. Eknath then begged him to take one of the pieces of stone. The Brahmin did so, and on looking at it he saw that it had turned into gold.

Some account must now be given of the writings of Eknath. As we have already said, he was a great poet. Poetry in the form of *abhangas* and *slokas* came from his lips extemporaneous-

ly. He also wrote several books. To enable people ignorant of Sanscrit to read the Bhagbat, he set about translating that work into Mahratti, and added exegetical notes. When two chapters of the book were finished, a Brahmin took a copy of them, and it became his daily duty to recite them. It so happened that the Brahmin had occasion to go to Benares, and, whilst there, he continued to recite the two chapters of the Bhagbat, after bathing in the Ganges, in the hearing of the people. The beauty and eloquence of the style, and the masterly manner in which the passages were explained, attracted the attention of a certain local Brahmin, who mentioned the version to a Sannyasi of great learning who was at that time in Benares. The Sannyasi expressing a desire to see the work, the Brahmin showed him the two chapters of the Bhagbat. He too was struck with its excellence: but he disapproved of the contents of religious books being made public, lest the people should be able to acquaint themselves with the *Shastras*, and no longer need instruction from Pundits who would thus lose their prestige. He, therefore, ordered one of his disciples to throw these two chapters of the Bhagbat into the Ganges. He then ascertained the name of the commentator, and sent some of his disciples to him with a letter requesting him to come to Benares with the Mahratta version of the Bhagbat made by him.

On arrival at Paithan, the men handed over the Sannyasi's letter to Eknath. Eknath had heard the name of the Sannyasi, and he considered it desirable to comply with his request. At that time, five chapters of the Bhagbat were ready, and he took them with him to Benares, and handed them over to the Sannyasi. The Sannyasi read them, and was convinced by them of the great ability of Eknath, but told him that he should not have undertaken the translation of the Bhagbat, as it would lower the prestige of the pundits, who were virtually the expounders of the *Shastras* to the people. Eknath replied that he thought he was doing good by making the Bhagbat accessible to those who were ignorant of Sanscrit, and that there was no injunction in the *Shastras* against such a course. After this an assembly of pundits was held in which a discussion took place between Eknath and the Sannyasi on the Hindu *Shastras*. In the course of the discussion, Swamijee put several intricate questions to Eknath; but he gave suitable replies to them all. Then Eknath, in his turn, put some questions to Swamijee; but that learned man failed to give satisfactory replies to them. In this discussion Eknath displayed a vast knowledge of the *Shastras* and great power of argumentation. The Sannyasi lost his temper; but Eknath carried on the discussion with calmness. The logomachy ended in the



victory of Eknath, and his fame now spread throughout Benares. The Pundits of that sacred place recognised him as the greatest Pundit of the time, and began to show him becoming veneration. At their request, Eknath remained in Benares for some time. During his sojourn here, he wrote an excellent book, called *Rukmini Sayambara*, or the marriage of Rukmini with Sree-Krishna, and completed his commentary on the Bhagbat, now known as *Eknathi Bhagbat*. It is not known what other work was done by Eknath during his stay at Benares : but it is probable that he continued to instruct the people by means of *Kotha* and *Kirtun*.

After returning to Paithan, Eknath resumed his work of instructing the people in the temple. At this time, he wrote some books, among which was the *Bhavartha Rámayan*, an elaborate poem of considerable merit. He did not live to carry this work beyond the account of the war between Ram Chandra and Ravana ; but it was completed by one of his disciples after his death. He wrote some other books also, *viz.*, *Atma Sukha*, *Hastamulak* and *Ananda Lahari* : but it is not known when they were written. During his life-time, the books were known to a few persons only ; but they became popular after his death.

The character of Eknath's teachings at the temple, which produced a marvellous effect on the audience, may be gathered from the following precepts :—

1. When taking the name of God, do so with sincerity. Mere utterance of it is of no avail. If you take the name of God and at the same time do not abandon your sins, you show insincerity.
2. Remove evil thoughts from your heart : and let Vithal (God) be the object of your thought.
3. Go to worship God with a pure heart.
4. Your first duty is to maintain your family. If you fail to perform your duties to those who depend on you, but make a show of your liberality by relieving the wants of others, you commit a great sin.
5. Whatever help you give to your fellow brethren, consider it to be your duty to give it. Do not expect anything in return for it.
6. Lead a family life, but do not be tenaciously attached to the things of this world.

In the year 1609 A. D he was taken ill. Feeling that his end was approaching, he sent for his disciples, and told them that he was soon about to leave them. He then expressed a desire to go to the banks of the Godavery and perform a *Kirtun* there. His disciples made the necessary arrangements ; and, the next day, after rising from his bed, Eknath bathed

and performed his usual worship. He then, with his disciples and other men who had assembled at his house, went towards the Godavery, repeating the name of Hari. On reaching the banks of the river, Eknath saw a crowd of men of different castes who had come there to hear his last *Kirtun* and to bid him farewell. Eknath was pleased to see them, and performed *Kirtun* with great enthusiasm. After the performance was over, Eknath took leave of all. He then walked into the river, and, after repeating several times the words "Victory to Jonardun," he took his *Samadhi*, i.e., absorbed himself in the Great Spirit. After a while the people brought his corpse out of the river and burnt it. A monument was then raised on the spot, and on it was placed the pair of sandals which Eknath had worn. At this spot, a gathering takes place every year to commemorate the anniversary of his death.

The great devotion of Eknath to his spiritual guide is an example worthy of imitation. The present age, with its so-called liberal views, may regard that devotion as servility; but it should be borne in mind that the relations which existed in ancient times between the teacher and the taught produced many dutiful men, who succeeded in placing India in the van of advancement. Eknath and Jonardun Punth followed the time-honoured procedure, and the result was that the teacher had every reason to be proud of his disciple, and Eknath, by the service he rendered to Jonardun Punth, rose to the acme of progress, and succeeded in showing an example of humility, forbearance, and activity, which has given him a high place among the saints of India.

There is an impression among some of us that, if we wish to obtain salvation, we must renounce the world. The life of Eknath has proved it to be an erroneous one. Eknath led a family life, and in the midst of it he showed his great devotion to God and his love to mankind. Indeed, the life of Eknath shows that a devoted servant of God can do more good in the midst of his family than in a place remote from the habitations of men.

At a time when priestcraft was in full force, Eknath displayed a liberality of mind which is wonderful. Whilst the Brahmins of Paithan hated the Shudras, Eknath made no distinction between a Brahmin and a Shudra. He served the same sort of food to both. He received them both at his house in a kind manner. He even went to the length of paying greater respect to a virtuous Shudra than he did to a depraved Brahmin.

In his dealings with the people, he made no distinction between Brahmins and Shudras. According to the Hindu *Shastras*, a Brahmin can take his food at the house of a virtuous Shudra. But the injunctions of the *Shastras* have been



thrown into the back ground, and customs which are the creation of the present time, have taken their place. Not to speak of Shudras, Brahmins of one class are now seen refusing to dine with their brethren of another class. It is much to be regretted that the liberal education our country-men have received has not yet resulted in imbuing them with liberality. The Hindus of the present day profess to have a great regard for the *Shastras*. But what do we see? They in reality attach more value to customs which are contrary to the injunctions of the *Shastras*, than to the *Shastras* themselves. This is the greatest of the evils that are corroding the heart of Hindu Society, and it should be the endeavour of every reformer to root it out. Mere preaching will not effect much. Let men like Eknath arise, and show by example what they preach. Eknath rose above the prejudices of his time. He had the courage of his convictions. He knew that it was against reason and the *Shastras* to refuse the invitation of a virtuous Shudra, and he accepted it; and the result is that, instead of being ridiculed, he is adored as a saint.

DEENANATH GANGULI.

#### ART. V.—ANQUETIL DU PERRON.\*

THE fame of Anquetil Du Perron was for a long time under eclipse. This was partly his own fault, for he was eminently self-willed and unsociable, and could not get on with his own countrymen any more than with the English. But the chief cause was the jealousy of Oxford men, who refused to believe that anything good could come out of such an objectionable combination as an Indianised Frenchman—a Gallo-Indian, if we may coin such an expression. All this has now passed away, and Anquetil Du Perron has come to be recognised as a discoverer of hidden treasures of knowledge, and as worthy to be ranked, for devotion and acceptance of hardship, though not I fear, for staying power, with St. Jerome and Csoma de Koros. In the present paper I do not mean to dwell on his services to Zend scholarship, a subject which I am incompetent to deal with, but I shall endeavour to describe the picturesque circumstances of his life, and to notice one or two of his less known performances.

Anquetil Du Perron, whose Christian name was Abraham Hyacinthe, was born at Paris on 7th December, 1731. He had an elder brother, born in 1723, who was also a distinguished scholar and writer of books, and a younger brother, who rose to be chief of the French Factory at Surat. He was partly educated at Amersfoort in Holland, whither he was sent, it seems, by the Comte de Caylus, Bishop of Auxerre, to study Hebrew and Theology † with a view to his entering the Church. Amersfoort is twelve miles North-east of Utrecht, and on the south of the Zuider Zee. It has, or had, a Jansenist Seminary, which is perhaps the place where Du Perron studied, and which is mentioned by him in his *Discours Préliminaire* under the name of Rhynweck. When he was at Chander-nagore, he tells us, he used to regret the tranquil, serious and laborious life which he had led at Rhynweck under the eyes of M. Le Gros and M. L Abbé D'Etémare. He, however, staid there only long enough to learn Hebrew and Arabic, and then returned to Paris, where he set himself to read in the King's Library, and gained, by his assiduity, the notice of the Librarian and of other scholars. In 1754 he happened to

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\* There is a notice of Du Perron by Dr. George Smith in Vol. XXIX. of the *Calcutta Review*, in an article called India and Comparative Philology, and it has been republished in Vol. VII. of the *Selections*.

† At p. 417 he refers to a display of knowledge of Thomas Aquinas, which he made at the island of Salsette, and at p. 425 also to his chaunting the creed there in church. Possibly these were remains of the Auxerre or Amersfoort studies.



see a facsimile four pages of the Oxford Vendidad Sâdî, which had been obtained at Surat by George Bouchier in 1718 and brought to England by Richard Cobbe in 1723.

This was the turning point of Du Perron's life, for he at once resolved to go to Gujrat, or Persia, in order to translate the work. His idea was approved of by Abbé Barthelemy and others, and the assistance of the French East India Company was promised to him. But the times were unpropitious, for the French Company had been exhausted by its long struggles with the English for the possession of the Carnatic, and 1754, the year of Du Perron's resolve, was also that of the fall of Dupleix. The expected appointment and passage to India did not arrive, and the young Du Perron got tired of waiting, and resolved to enlist as a private soldier of the French Company. "My impatience," he says, "to begin a career which I foresaw would be long and be strewn with difficulties did not suffer me to await the fulfilment of the promises of those who were interesting themselves in my design. I was also determined to be indebted to nobody but myself in such an enterprise, so that I might not have to incur reproaches in case of failure. . . . Such being my sentiments, and being sure of the strength of my character, and practised for several years in an austere life, and in vigils and sobriety, the position of a soldier of the Indian Company appeared to me to be the only one open to me." He, therefore, went to the recruiting agent, and with some difficulty induced him to enrol him. The short time that preceded his departure, he employed in putting together, without his relatives' knowledge, his kit for the march, which consisted of but two shirts, two handkerchiefs, and a pair of stockings. To this he added a mathematical case, Leusden's Hebrew Bible, Montaigne's Essays, and Charron's Treatise on Human Wisdom. Only the evening before his departure did he break the news to his brother. "What an interview! I cannot think of it without a shudder." His brother promised to keep his secret for two days, and Anquetil set off next morning on foot, after distributing among his new comrades the regulation kit supplied by the Company. They started in winter, 7th November, 1754, under the command of a petty half-pay officer, before daybreak, and to the melancholy sound of an ill-tuned drum. Their destination was L'Orient, a seaport on the Bay of Biscay, and the Headquarters of the French East India Company. The march occupied ten days, and Du Perron gives a melancholy account of the state of the roads, the wretchedness of the peasantry, and the vices of his companions. His account of the latter bears out the complaints of Dupleix, that the recruits sent to him were the vilest *canaille*, and shows that the French

Company was even worse served than the English, though the latter also could not afford to be nice about the quality of their men, as may be seen from the account in Scott's Surgeon's Daughter. One incident described by him shows that there was the same jealousy between King's troops and Company's troops in France as in England. Du Perron's detachment had reached Ancenis, in Brittany and on the Loire, but were not allowed to be billeted there, as it was occupied by the King's troops. After waiting in the Square for three hours, exposed to the most bitter cold, they were obliged to march off to a village six miles away. It had been raining for two days, and the roads were frightful. It was night when Du Perron reached the cottage assigned to him. The miserable hut was only half thatched, and inside was a poor peasant-woman suckling her child, and surrounded by three other children nearly naked.

"Some charcoal, hardly smoking, no bread, eggs or milk, for men starving and frozen to the marrow."

The half-pay officer (L'Invalide) threatened and swore, but Du Perron's youth and gentleness were more successful, and the scene ended somewhat like a well-known one in Rousseau's Confessions.

Du Perron's sufferings were now nearly at an end. He reached L'Orient on 16th November, and next month the Company's Director gave him his discharge, and told him that the King had granted him an allowance of 500 francs a year, and that the Company would allow him a free passage on one of their ships, the *Duke of Aquitaine*,\* a seat at the Captain's table, and a cabin. They set sail from Port Louis on 24th † February, 1755, and arrived at Pondicherry on 9th August following. Thus the voyage lasted only about five and a half months, which would seem to be rather a good passage, especially as they stopped on the way at Mauritius and Bourbon. But it was marked by a disastrous sickness. A contagious disease broke out among the passengers and crew, and carried off upwards of a hundred men, including the Captain. For a time it could not be diagnosed, but at last the Surgeon's mate recognised it as similar to an epidemic that he had seen in the prison of the Bicêtre. It had, indeed, been brought from there, or from other prisons, by some jail-birds among the recruits. It was the ship's first voyage, a fact which, perhaps, accounts for the quick passage—and we are told that the unseasoned condition of her timbers aggravated the malady. One soldier, a scum of the prisons,

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\* Apparently this vessel was afterwards taken by the English, and foundered off Madras in a storm in 1760. See Markham's Rennell, p. 34.

† See his table of Errata.



threatened to sink the ship ; so they put him in irons, and, when he contrived to escape, they tied him to the mizzen. There, having nothing but biscuit and water, and being exposed to the sun and rain, he arrived in good health at Mauritius, while all the crew were on the sick list. They left him there and got in his room a soldier who had escaped the gallows in Europe and deserved them a second time shortly after his arrival at Pondicherry.

It is interesting to compare Du Perron's voyage with that of Dr. Ives in the *Kent*. Both ships set sail on the same day of the month, but a year apart, the *Kent* leaving Plymouth on 24th February, 1754, and the length of the voyage was about the same, for the *Kent* anchored off Fort St. David on 10th September. Ives' ship also was attacked by sickness, a putrid fever breaking out on board, and this being followed by scurvy. There were over 150 sick on the *Kent*, but they nearly all recovered by being landed at Madagascar.

When Du Perron arrived at Pondicherry, he found that Dupleix and Godheu, to whom he had letters of introduction, were gone, and that the Governor-General was De Leyrit, who had been transferred from Chandernagore. His reception was rather mortifying, De Leyrit taking almost no notice of him. He had, indeed, come at a bad time, the French officials being in no mood to listen to questions about Zend or Sanscrit. Afterwards, however, De Leyrit allowed him Rs. 65 a month, or about 1,900 francs a year ; but this was inclusive of the King's pension of 500 francs. In 1760 De Leyrit raised his pay to Rs. 100 a month, in consideration of his travelling expenses and of his having to see the Parsi priests. This was the utmost he ever drew in India ; and though, as he says, it only sufficed for bare necessities, yet he is candid enough to acknowledge that it was very good of De Leyrit and the Company to allow him so much, seeing that he never was of the least use to their Factories. De Leyrit, indeed, had proposed to him to act as Interpreter, and the instance was pointed out to him of a man who had acted in this capacity and had amassed a fortune of four lacs. "But then," says Du Perron, "I would have had to stay at Pondicherry and give up my investigations. Moreover, the mercenary and quasi-menial office of Interpreter did not suit my independent character."

The young and ardent scholar found Pondicherry too gay for his taste, and went off to Gingi, without ever bidding adieu to the Governor. At Gingi he contracted a dangerous illness (the place being famed for its insalubrity), and had to return to Pondicherry. He did not, however, stay long there, but went off, contrary to De Leyrit's wishes, to Chandernagore, in April, 1756. The ship reached Goulpil (?) at the Sandheads, and

there Du Perron quitted her for a pinnacle, in order to arrive more quickly at Chandernagore, but he was compelled, by a new attack of fever, to fall down the river again to Báranagar. Here he had an experience which reminds us of the spies at Jericho, for he was taken into a brothel kept by a woman named Catan. "They took me to this woman's house as the place where I would be best cared for. A bed was at once made up for me, and Catan and two of her girls sat down beside me, and for five hours nourished me with tea and sago. Delighted with the humanity of these poor victims of debauchery, I paid them liberally, and the whole of the inmates reconducted me to the pinnacle wrapped in a blanket, making a thousand prayers for my recovery. I have since heard that the Mahomedans, when they marched against Calcutta, towards the end of 1756,\* destroyed this place and dispersed the inmates." He describes Báranagar as famous for its silk and cotton fabrics, and as inhabited by black Christians who formerly were under the Portuguese, but were at the time of his visit under the protection of the Dutch. Most of the houses were brothels, Catan's being the largest. There was a cross over the door to her house, and on the right, as you entered, there was a Chapel dedicated to the Virgin, and on the left one dedicated to St. Anthony. The interior was divided into little chambers, each furnished with a bed and musquito curtains. Two black doctors looked after the health of the inmates, and the whole was under the direction of Catan, who was said to be worth sixty thousand rupees.

Du Perron reached Chandernagore or Maundy-Thursday, 22nd April, still suffering from his fever, and was coldly received by the Company's Director. His treatment, he says, disgusted him with the Settlement, and he made no friends there. He passed his days in translating Persian books, and in walks in the charming environs. He spent about a year here, and then left it suddenly, as he had left Pondicherry, without even notifying his departure to the Director. The excuse he gives is that he found he was wasting his time, and that he foresaw that Chandernagore would be taken by the English, and that probably he would be sent back to Europe, a prisoner, just when he had reached the goal of his voyage. "My conduct was blamed, but if it led to the misfortunes which poisoned part of my Indian career, it led me, on the other hand, to the knowledge of India, and to the acquisition and translation of the works of Zoroaster." He left Chandernagore on 9th March, 1757, for Cossim.

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\* Probably this refers to Siraj-ud-Daulah's second march to Calcutta, after the tragedy of the Black Hole, and in the end of 1756, or beginning of '57.



bazar, which he reached in four days. His design, he says, was to help his countrymen, by using his knowledge of Persian, to represent their danger to the Nawab, and eventually to make his way to Benares, where he would settle down to the study of Sanscrit. He went by land, and forded the Ganges (the Bhagirathi) at Plassey, which he describes as a long succession of scattered houses extending over about eight miles, and as the place where the Nawab kept some 400 elephants. Beyond Plassey he stopped at a large Banian tree beside a tank, which he says could have given shade to more than 600 men. I am afraid that it must have now disappeared. He reached Cossimbazar, or rather Syedabad, at 8 P. M. on 12th March, and was kindly received by Law, the nephew of John Law, the financier, though the latter did not approve of his journey. A few days afterwards he went in the afternoon with Law to pay his respects to the Nawab (Sirajah Daula) who was then at Hirajil on the opposite side of the river to Murshidabad.

"The Nawab was expecting me, for they had told him that a Frenchman was coming who could speak Persian. Before reaching the Darbar, I crossed three spacious courts filled with servants and sepoys. Then I entered a beautiful garden, adorned with rows of trees and flower-borders furnished with irrigation-channels. At the end there was a Terrace, at the foot of which I left my shoes and made the *Sijda*, carrying my hand from the ground to my head. The Darbar was on the Terrace, and was a large Divan, open towards the garden and with one side to the river. It seemed to be about 25 or 30 feet square.

Its canopy was supported by pillars draped in embroidered muslin, variegated by tassels of gold and silver bands. In the walls there were a number of little niches (*táqs*), and the floor was covered with mats over which there was a double or treble muslin carpet. I found the Nawab reclining in the middle of this Divan, resting on a brocaded cushion. He had only a skull-cap on his head: his dress was of embroidered muslin, and he had kinkob pajamas. He had an ivory baton, ending in a silver hand, with which he frequently scratched himself. He seemed to me to be of middle height, and was black, bright-eyed, and with a very open countenance. He disliked the English, who had been rude to him in the Nawabship of his uncle (read grand-father). On his left were his brothers, seated on the carpet with their legs crossed. I put myself behind Mr. Law, who was on the prince's right, and alongside of me were Mir Madan, a Mogul lord, and Rajah Dulab Ram and five or six other Rajahs, each of whom could put some 20,000 men in the field. Our interpreters stood behind us, and the officers of the Palace, the guards, &c., formed a horse-shoe, leaving the front of the Darbar open. The interview consisted of compliments and of ridiculous questions on the part of the Nawab, who seemed more taken up with our dress and plumes, than with the business that had brought us there. . . . While we were there, the troops came to pay their respects, a ceremony which takes place morning and evening. The officers advanced at the head of their companies, stopped at the foot of the Terrace, made the *Sijda*, and said: "Umr Daraz daulat Ziyada bashad," *i. e.*, "Live long

and increase in dominion." Scarcely had we left the Palace than we heard a dreadful noise of drums and trumpets, mingled with the discharge of muskets and of *Cailleteques*.\* This was the Nawab going to the Mint with a retinue of about 4,000 men. He was in a palanquin followed by several elephants, and lighted by upwards of 400 seven branched torches. We got down according to custom, and then continued our journey."

On the 19th March, the news came to Syedabad that Chandernagore was closely invested; and Anquetil, being now convinced that the Nawab's assistance would not come in time, left for Chandernagore the next day. He arrived in sight of it on the 23rd, just after it had surrendered, and he had considerable difficulty in escaping being made prisoner. He got his boatmen to land him on the east side of the Ganges opposite Chinsurah, and eventually made his way back to Cossimbazar, which he reached on the 28th. On the way thither, four miles below Plassey, he met the army which the Nawab had sent to relieve Chandernagore. It was commanded by Rajah Dulab Ram, his Lieutenant being the brave Mir Madan, who afterwards fell gloriously at the battle of Plassey. Du Perron's description of Mir Madan is as follows:—"I found him," he says, "at his toilette. He was a Mughal, about 5 ft. 10 in. in height, and nearly white. He had regular features, while a sabre cut on his cheek gave him a soldierlike air. He was standing before a glass, naked to the waist, and busied in twisting his moustaches, while his barber was shaving his arm-pits, &c. He sent me to his brother, who was in command of the artillery."

From Cossimbazar Du Perron marched with the force as far as Colgong, where they arrived on 1st May. Here an explosion occurred on the part of Law's officers, who found Du Perron's society intolerable, perhaps because he was given to captious criticism of their proceedings. No doubt, his abrupt departure from Chandernagore had never been forgotten or forgiven. The result was that he left the camp, and retraced his steps to Murshidabad, with the determination to make his way back to Pondicherry. He walked, attended by a coolie, as far as Rajmehal, and then, owing to his swollen leg, he purchased a pony, and reached Murshidabad in safety, in spite of dangers from wild elephants and from losing his way. In a note he gives the itinerary from Colgong to Cossimbazar, and confirms the statement of Orme, that Sirajah Daula blocked up the Bhagirathi in order to prevent the English ships from descending by it to his capital.

At Murshidabad he had an adventure with a well-known

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\* This word was first pointed out to me by my friend, Mr. Irvine. It means, see Du Perron's Index and Glossary, a long matchlock, which is fired from a rest. I think that the word must be a mistake for *mailteq* or *mailloq*, which is given by Shaw and Zenker as Eastern Turkish for a gun.



Mahomedan named Khuda Lati, which reminds us of a scene in Roderick Random. He set off on horseback from Murshidabad on 15th May, 1757, and consequently in the height of the hot weather. He gives an interesting account of his hazardous journey, but it is too long for insertion here. He travelled by Katwa, Burdwan, Midnapur, Balasore, Cuttack, and Jagannath, where he heard the story of the theft of the ruby which formed the idol's eye, but was told that the thief was a Dutchman. He had many encounters with the natives and wild beasts, and also fell in with an army of Sunyassis, 6,000 strong. At page 89 he mentions passing, four miles beyond Palour, and in the Ganjam territory, a small pagoda in the midst of the sands, looking like a pineapple and called by sailors the White Pagoda. He states that he carved his name on the west wall of the pagoda, and it would be interesting to know whether it is still there. He reached Ganjam on 10th June, after a journey of forty days, counting from 2nd May, when he left for Colgong. After halting five days there, he continued his journey *via* Chicacole, and Masulipatam and Pulicat, where he took a boat till he passed Madras. Then he resumed his land journey, passing by Sadras, and visiting the temples of Mahabalipur.\* Eventually he reached Pondicherry, where he found his brother. In a note he says that his journey from Colgong was over 1,200 miles, and was made in 101 days, *viz*, 56 days of travelling and 45 days of halts. He found Pondicherry in a worse condition than it was in 1755. There were no funds in the Treasury, and so the officers could not get payment of their salaries. His brother was here appointed second-in-command at Surat, and the two went off together by sea to Mahe, where they arrived on 17th November, 1757. Here the brothers separated, as Du Perron went off in a coasting boat, which he calls a "tonni," (*i. e.*, a toni, or dhoney) to Calicut and Cochin. Returning to Mahe, he went by sea to Mangalore and Goa. Here he rejoined his brother, but the latter shortly afterwards went on by land to Surat. Du Perron remained for a month at Goa, and then went off to visit Aurangabad, Daulatabad and the temples of Ellora, of the last of which he gives a detailed description. In the course of their journey, he ascended and crossed the Western Ghats. He arrived at the foot of the mountains, he says, at 7-30 A.M., and reached the top at 11, after resting thrice on the way. The road was frightful and almost perpendicular, and with torrents on either hand. When he got to the top, he indulged for a moment in not unnatural exultation. The top of

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\* When near Covelong he would fain have put his boots on, for the sand burnt his feet, but, fear of being recognised for a Feringhi—he was in Hindustani dress and passed for a Mogul—compelled him to go on bare-foot, or at least with only sandals.

the Ghats, he says, "has the most beautiful turf in the world, and I sat down on it for a while to enjoy a pleasure such as wealth or greatness cannot give. Here I am at the centre of the seasons which regulate the operations of the Indians and of the European nations who are contending for the possession of this rich country. . . . Then I turned my face to the west, and I cannot recall without a kind of transport, those tiers of mountains surrounded by clouds, and bounded by the wide seas; those successions of villages whose gloom contrasts admirably with the shining flanks of the mountains; that group of peaks, heaped up, and flung at random, and smiling from the rays of the sun reflected by the waves of the sea,—all this still presents to my mind the idea of a chaos, which in a manner carries me away to the origin of the Universe."

Eventually he reached Surat in the beginning of May. "I found myself," he says, "at the gate of Surat at 5 P.M., much weakened by dysentery. I had to wait some time for the Nawab's passport. At last a peon of the French chief came for me, and at the end of half an hour I had the pleasure of embracing my brother at the French Lodge." The third part of the *Discours Préliminaire* begins with a lengthy account of the history of Surat, and of the doings of the English there. This account has some valuable notes, supplied to him by Nur Beg, the Librarian of the last Subadar of Ahmedabad, containing, among other things, a table of the 22 Subahs, or Provinces, of India. In a note at page 254, we have what seems to be an interesting chronogram, giving the date of the building of the Surat Fort. Du Perron states then that the Fort-gate has a Persian inscription, which he transliterates, "Sadd boud bar sinah djan Feringi in benah," and translates, "This fortress was built to stop the Feringhis." He also states that this gives the date 931, or 1524 A.D. Apparently the Persian, is مد بود بر سینه جان فرنگی این بناه which yields, according to *abjad*, the number 931, and seems literally to mean: "This structure was an obstruction on the breast of the Feringhi." Anquetil staid nearly three years in Surat, arriving on 1st May, 1758, and finally leaving it on 15th March, 1761. But during this time he made an excursion to the Caves of Keneri in Salsette, and to Elephanta. It was at Surat that he achieved the object of his journey to India, *viz.*, the acquisition of the Zend books and their translation. He deemed his commencement of the study to be an epoch in literary history, and so was careful to set down the date according to various chronologies. It was, he tells us, on 24th March, 1759, corresponding to Amardad the 6th of Meher 1128 of the Yazdagird Era, 1172 Hijra and 1813 of the Era of Vikramaditya. But in a few months his work was stopped for a while by a disastrous accident. One day, seeing



a coolie struggling under the weight of a chest, he went to his assistance, and the strain of the exertion brought on an ailment, which was called in Surat the displacement of the navel. He gives a graphic account of the Parsi masseur who cured him. Scarcely was he recovered from this illness when a new trouble assailed him. On 26th September, 1759, he was attacked at 5 P.M., in the middle of Surat, by a Frenchman who, as he says, had been stirred up against him by slanderous discourses. He received *trois coups d'épée, deux coups de sabre*, which I suppose means three thrusts and two slashes, and was just able to drag himself to the French Factory. This affair is referred to by Sir Erskine Perry in a notice of Anquetil Du Perron in the Proceedings of the Philobiblon Society for 1854, and he states that Du Perron succeeded in killing his adversary. Sir Erskine adds that, as Du Perron makes no allusion to the affair in his narrative, it is probable that some affair of gallantry was at the bottom of it. The statement that Du Perron does not allude to the occurrence is very unfortunate, for he refers to it in three places, *viz.*, pp. 336, 431 and 440, though in none does he give details as to the cause of the quarrel, nor even mention his adversary's name, or state that he killed him. Sir Erskine Perry's statement to this effect is quite correct, and probably he got it from local information when he was Judge of Bombay, for none of Anquetil's French biographers seem to mention the fact. But I do not think that there is any ground for supposing that there was an affair of gallantry involved in the quarrel. Indeed, Anquetil seems to have been to some extent a misogynist, and so not likely to have been involved in trouble on account of a woman. At least, so I conjecture from his remark (p. 289, note) that the famous Madame Dupleix had all the vices, as well as all the merits, of her sex. A Frenchman, and one who wished to stand well with the sex, would hardly, I should think, have admitted that woman had any vices. Anquetil's account of the affair is incomplete, and marked with asterisks. At page 336 he tells us that he was attacked at 5 P.M. in the middle of Surat, and that the affair took place in the presence of more than 400 persons, who did not dare to separate them. He was able to drag himself to the French Factory, covered with blood. Thereafter he had to undergo the most painful operations. English, Dutch and Portuguese surgeons treated him. They used, he says, both fire and the knife, but the strength of his constitution saved him. The Nawab Ali Newaz Khan and others sent to make enquiries, and the English, after examining his adversary's servant, who was known to be greatly attached to his master, and other witnesses, came to the conclusion that, in spite of the war between the two countries, they could give him the protection of their flag. Apparently this was continued for

the remainder of his stay in Surat; for, though he tells us that, in April, 1760, he received permission from the Pondicherry authorities to return to the French Factory, yet he continued to reside in his English quarters, and we find him, in 1761, making use of his alleged position as an Englishman to sue another Anglicised Frenchman (?) for a debt due to Anquetil's brother, but which the latter had transferred to him (*vide* p. 433).

The second reference to the duel is at page 431, where he tells us that he received a letter from the new husband of his adversary's widow, threatening to carry the affair to Pondicherry and even to Europe. The effect of this was that he again sought the protection of the English. The last reference is at page 440, where he tells us that he saw, at Mahe, the Engineer officer who was the widow's new husband, and had a reconciliation with him. Possibly this engineer was the M. du Palmas of whom he speaks at page 124.

As Du Perron speaks of the Surat Council's having examined witnesses, and of the Bombay Government's having signified its approbation of their proceedings, it occurred to me that it might be well to examine the Surat and Bombay Records for September and October, 1759. On application at the India Office, these were obligingly placed at my disposal; and I found in them the following references, which throw a good deal of light on the duel, though they do not specify the cause of the quarrel.

Beginning with the Bombay Records, the first thing to be noticed is an entry of 13th September, 1759, stating that an express had come from Tellicherry, stating, among other things, that a packet of French letters had been intercepted, and forwarding a translation of one of them, the rest being only about private affairs. This is followed on the 18th idem by the following:—

"Resolved that an attested copy of the translation of the letters intercepted from M. Biquant be enclosed to those gentlemen (the Surat Council) to inform them of his having concerted a plan for seizing several Moors' ships even in Surat Road, and directing them to represent it to Meah \* Atchand and Pharass Cawn, that they may take suitable notice thereof."

The next extract is from the Surat Records, dated 8th October, 1759:—

"A few days before we received your commands, giving cover to translate of M. Biquant's letter, a quarrel happened between him and M. Du Perron, brother of the French Chief, whom Biquant assaulted in the streets, and in which affray he was killed, and Mons. Du Perron dangerously wounded. Otherwise proper notice should have been taken of his proceedings as your Hon'ble Council directed."

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\* The Miatchen or Mu'inuddin and Fâris Khan of Du Perron. Miatchen was Nawab of Surat and Fâris Khan his Deputy, but he was the real Nawab according to Du Perron, p. 304.



On the 10th idem there is the following :—

“Monsieur Du Perron came to the Factory and requested we would give him protection on account of the unhappy affair that had happened between him and Mons. Biquant.”

12th Idem.—The chief lays before the Board a letter which he this morning received from M. Anquetil De Briancourt, reclaiming Mons. Du Perron, who, on account of the unhappy affair that had happened between him and Mons. Biquant, came on the 10th instant to our Factory for protection. The same is therefore taken into consideration, and it appearing to us that Mons. Du Perron was not the aggressor, but on the contrary was assaulted by Mons. Biquant in the open street, and what he did was only in self-defence, it is agreed that the protection be given him that he has requested, notwithstanding the war subsisting between the two nations, and that the Chief write an answer to Mons. Briancourt to the purport of the above. Directed that copies of Mons. Briancourt's letter to the Chief and his answer follow this consultation, and other copies be forwarded to Bombay.

Translation of Mons. Briancourt's letter to the Chief :—

“Having been yesterday about some business at the French gardens, I was very much surprised to find at my return that M. Anquetil Du Perron had taken this opportunity to leave the French Factory and ran for shelter to yours ; that he received the protection of the English Flag, and that you granted it to him. As the unhappy affair which he had with M. Biquant, although known to the whole town the right he has on his side, renders him accountable to his superior until he has obtained his pardon. The duty of my trust, Sir, obliges me to reclaim him in the name of the King. In consequence thereof I shall be obliged to you if you would send him back to me ; in default of which I desire you would not take it amiss if I protest against his running away, and against the protection that you have granted him of your Flag.

I have the honour to be with profound respect,

SIR,

Your most obedient humble Servant,

*Surat, 11th-October-1759.*

The Chief's answer to the foregoing is as follows :—

SIR,

I yesterday received your letter reclaiming Mons. Du Perron, who on account of the ill consequences that might result to him from the unhappy affair between the late Mons. Biquant and him, thought himself obliged to seek the protection of the English Flag till such time as his behaviour therein could be set forth in its proper colour. Notwithstanding the war between our two nations, yet, as we are in a neutral city, and I have sufficient testimony that Mons. Du Perron has on this occasion only acted on the motives of self-defence, on being assaulted in the open street, in such case I did not think I ought to refuse him the asylum he sued for in our Factory, which will be continued to him, and as this is no more than what is always practised amongst civilised nations, will, I doubt not, justify my protection of him not only to you, but to the whole world.

13th October.

The last entry is in the Bombay records of date 4th November, and is as follows :—

“Your granting protection to Mons. Du Perron on account of the late unhappy affair between him and Mons. Biquant meets with our approbation.”

The Chief of Surat at that time was John Spencer, and the councillors were Robert Holford, Samuel Court, Cecil Bowyer, and Robert Erskine. Nathaniel Stackhouse was the Secretary.

Though these extracts leave the cause of the quarrel unexplained, it seems unlikely that it could have been anything very discreditable to Du Perron, as otherwise the English would hardly have given him shelter, and that, too, in a time of war. Certainly it was not likely that there was any intrigue with Madame Biquant; for, if Anquetil had been her lover, she probably would not have been so forward and persistent in her endeavour to bring him to justice. I suspect that the affair arose out of Du Perron's unbridled tongue. Though a solitary man, or, perhaps I should rather say, because he was a solitary man, he was wanting in reticence, and often made imprudent and cutting remarks. He could not control his pen, as his personal narrative abundantly shows, and it is probable that he was equally reckless with his tongue. Though M. Biquant was the assailant, yet he probably had had provocation of some sort. Else why was the local French feeling so strongly against Anquetil, as seems to have been the case, and why had the latter not confidence enough in his own innocence to stand his trial, instead of taking the extraordinary step of twice soliciting the protection of a hostile nation. The letter referred to by the Bombay Government seems to show that Biquant was a man of violent character; and, if I may make a guess, I am inclined to think that some careless remarks by Du Perron about Biquant, or his wife, were the instigating cause of the duel. Though this encounter must have interfered with Du Perron's studies, it certainly did not bring them to a close, as Sir Erskine Perry states, nor did it immediately lead to his departure from Surat, for he staid there for about eighteen months longer. It was subsequent to the encounter that he contrived to be admitted in disguise to the Parsi temple at Surat, and to witness the religious ceremonies there, pp. 358-59.

This was in June, 1760. He gives a graphic account, pp. 358, etc., of his visit, and tells how it led to his getting hold of some Zend MSS. According to him, no stranger had ever entered a *Derimher* before, except the Emperor Akbar, and the latter, instead of making offerings to the sacred Fire, had sullied it by his saliva. I suppose this refers to Akbar's having smoked the *huqqa*, for Anquetil tells us that his Parsi ins-



structor, Darab, had come to look upon him (Du Perron) as almost a proselyte, and had several times tried to persuade him to give up the *huqqa*, observing that whatever went out of the body, breath, saliva, etc., sullied Fire. But if Mahomedan chroniclers are to be believed, Akbar never took to smoking. In November, 1760, Du Perron went off in a *palki* to explore Salsette and Elephanta. He visited several Parsi settlements on the route, eventually arriving at Bassein, where he took boat for the island of Salsette. His object was to examine the Cave-temples of Keneri, of which he has given a detailed account. At that time the island was in the hands of the Mahrattas, and he tells us, p. 427, that he visited the Mahratta Governor, and was very well received by him. It is remarked in the *Imperial Gazette* that Salsette will ever be associated with the name of Victor Jacquemont, as it formed the scene of his last labours. But it has other memories also, for, not to speak of Anquetil Du Perron, Salsette was the place where Akbar's Missionary, Rudolf Aquaviva, and his companions were martyred, in 1583. From Salsette Du Perron went by boat to Elephanta, of which he has also given a description, and then, returning, visited Tanna, where he had an amusing experience. The day after his arrival was the 8th December, the day of the festival of the Conception of the Virgin, and a great day in the church of Tanna. The Christians were already assembled from all parts of the island, and nothing would satisfy the Curé but making Anquetil chaunt the creed at High Mass. It was in vain that he protested his want of skill. "The proposition, he says, seemed to me strange. In my travels I had several times been taken for a Doctor, and I had got over such difficulties by never waiting to see the result of my prescriptions, but I was not aware that a Frenchman was bound to be a musician. It was in vain for me to urge my incapacity ; my excuses were taken for excessive modesty, and I had to chaunt in spite of myself. The evening was spent in rehearsing with the Curé's two assistants. The sight next day rewarded me for the fatigues of the evening. I went to the Church at 9 o'clock. I found it full of thousands of Christians, all black, and smelling very strong. The nave was adorned with boughs, formed into arches, and with pillars and balustrades of coloured paper in silver and gold. I was the only white man among this crowd of blacks, and I chaunted the creed *en faux-bourdon* (plain-song?) with four instruments, which accompanied me, or which I followed, *tant bien que mal*."

On his way back to Surat, he stopped at the town of Nosāri, one of the oldest and largest settlements of the Parsis. He thought now of visiting Benares, and even China, but his health

broke down, and the positions of the French went from bad to worse. The affair of M. Biquant also pressed upon him, and finally obliged him to seek again the protection of the English, and to ask for a passage to England. He left India on an English ship, in May, 1761, and after a disagreeable passage arrived in England on 17th November, 1761. On the way they touched at St. Helena, and he saw there Maskelyne,\* the astronomer and brother-in-law of Clive. On landing, he was treated as a prisoner of war, and sent to Wickham, a village in Hampshire, and, according to Du Perron, twelve miles distant from Portsmouth. It is famous as being the birthplace of William of Wykeham, and also as the place where Johnson's friend, Joseph Warton, died. I cannot find that there ever was any prison here. Perhaps Du Perron means Porchester Castle, where some 4,000 or 5,000 prisoners of war were detained at about this time. Or it may be that, owing to want of accommodation at Porchester, some prisoners were quartered at Wickham. They were not shut up, but on their parole, and allowed to walk within a radius of two miles. Du Perron visited in the neighbourhood a Mr. Garnier, of whom he speaks very highly, and a descendant of whom apparently—Mr. J. Carpenter Garnier—seems to reside at the family house of Rooksbury Park. In January 1762 Du Perron visited Oxford, and he has recorded some observations about Dr. Hunt and others there, which probably stirred up the youthful Sir William Jones to write his fierce letter to Du Perron. On 14th March Du Perron arrived in Paris, and next day deposited his MSS. in the Royal Library.

This was, perhaps, the most valuable result of his voyages and adventures. He had, he says, page 429, over one hundred and eighty MSS., including two copies of Zoroaster's works, seven dictionaries of modern Persian, and the three most famous Sanscrit dictionaries. By bringing home these MSS. he performed a service to oriental literature equal to that afterwards executed by Brian Hodson. His Zend MSS. have been the foundation of the labours of Burnouf and Darmesteter, &c. He also, he tells us, brought home many botanical specimens, which he sent to Jussieu.

In 1771, or some years after his return, he published three quarto volumes containing his personal Narrative, a life of Zoroaster, and a translation of the Zend Avesta. This translation is now, I believe, obsolete, and the most valuable parts of the book at the present day are the personal Narrative, and the account of Parsi ceremonies. It appears that he published

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\* The satirical account which he gives of Maskelyne's behaviour at table is a thing which, even if true, gentlemanly feeling should have prevented Du Perron, as one of his hosts, from describing.



an abridged account of his travels in the *Journal des Savans* in 1762, the year of his return to France.

It has been said by M. Darmesteter that Anquetil spent nine years in studying his materials. If this were so, he followed the Horatian maxim, and cannot be charged with precipitation. But it would seem that the delay was more due to difficulties of printing than to the labour of preparation. He himself says nothing about spending nine to ten years in preparation. On the contrary, he speaks in his preface of having finished his translation at Surat in 1760, and he says the same thing in his *Discours Preliminaire*, where, at p. 354, he says that he had finished his translation in September 1760. Indeed, he was hardly in a position to better his work, for he no longer had his Parsi instructor.

When Du Perron returned to Paris, he was still a young man—barely over thirty—and he had the great pleasure of finding his father still alive. He lived for many years afterwards, passing through all the horrors of the Revolution, and not dying till 18th January, 1805. But the eventfulness of his life was over, though he must always have been a picturesque figure in the streets of Paris. He read papers at the Academy, published his translation of the Zend Avesta, assisted in the publication of Tiefenthaler's *India* and translated the *Upnishads* into Latin from the Persian of Dara Shikoh, &c.

The publication of the Zend Avesta led to a violent dispute. English scholars refused to believe in its genuineness, and Sir William Jones, then a young man, wrote a smart letter in French, in which he held up Du Perron to ridicule. There is little argument in this letter, which deals merely with Du Perron's personal narrative. Du Perron's vanity, his allusions to the lilies and roses of his complexion, his gibes at the Oxford professors, etc., are dilated upon, but there is little attempt to discuss seriously the authenticity of the Zend books. Jones was, in these days at least, pre-eminently a man of literature, and one who, not unjustly, refused the name of learning to a mere knowledge of languages. The latter was only a means to an end, and a man who, like Browning's Grammarian, did not get beyond verbal questions, was regarded by him with ridicule. The sciences of Comparative Philology and Comparative Mythology were then unknown, and Jones' view was that Du Perron's work was a galimatias—idle gibberish, unworthy the attention of a man of sense. Either Zoroaster never wrote it, or, if he did, it was a farrago of nonsense. I should think that it was afterwards a sort of judgment upon Jones that he had to translate a good deal of similar nonsense and petty ceremonialism in the *Institutes of Manu*. No doubt Du Perron laid himself open to attack. His bad qualities, as well as his good

ones, came out in his Rousseau-like narrative, and, not content with writing himself down an ass, he claimed that his fellow-men were also fools.

I am not aware whether Du Perron ever knew \* who was his assailant. If he did, he does not seem to have taken any unworthy revenge, for he exults in the establishment of the Asiatic Society of Bengal, of which Sir William Jones was the founder, and he does not deny merit to Jones, though there is a touch of sarcasm in his description of him, as a learned man who wrote fluently about many things. I think he must have felt that the attack was not wholly undeserved. He had disregarded the conventionalities and had thrown ridicule on a nation and on individuals who had rendered him, as he himself admits, material assistance, and had shielded him from his own countrymen. He may even have felt a kind of sympathy with Jones, for, after all, it was a quarrel between two Celts.†

But though Jones' attack was not unprovoked, and gratitude to his University ‡ and friendship for Dr. Hunt, the Laudian Professor of Arabic, may have stirred him up, yet I fear that there was a more ignoble cause for the scepticism of English scholars. They must have felt sore at having been surpassed by a young and petulant Frenchman. They had had the Zend books in their possession before Du Perron was born, but they let them lie unheeded, just as they did at a later period the MSS. sent by Brian Hodson. It was a most unpleasant surprise to find a beggarly Frenchman coming in for all the honour and glory of the discovery. It was in part at least similar feelings which led us in after years to discredit Stanislaus Julien's translations from the Chinese, to refuse to believe in the possibility of the Suez Canal, and to scout the discoveries of the grocer's boy—Schliemann, in the plain of Troy.

Du Perron wrote several works about India, and in these he did not spare the English.§ They are not pleasant

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\* Probably he at least suspected the authorship, for Jones told Lord Teignmouth (Works I. 336, ed. of 1807) that Du Perron studiously avoided meeting him while he was residing in Paris. Jones did more justice to Du Perron in an address to the Asiatic Society in 1789, where he said that Du Perron had the merit of undertaking a voyage to India in his earliest youth in order to recover the writings of Zoroaster, and that he would have acquired a brilliant reputation in France, but for his immoderate vanity, and virulent temper.

† Apparently Jones was a Celt only on his father's side.

‡ In the letter to Reviezki, quoted by Sir Erskine Perry of December 1771, he speaks of Du Perron as "*pulchellus, nescio quem, terrae filius qui Academiae nostrae conviciari ausus est.*"

§ He is at the same time full of admiration for Warren Hastings, paying him what is, in his eyes, the high compliment of comparing him to Dupleix. Hastings' greatness, he says, is his own. What is unjust and inhuman in his proceedings, is due to the genius of the British administration.



reading, and are more or less unjust; but great allowance is always to be made for a Frenchman writing about India. They may not do well to be angry, but it would be contrary to human nature for them not to be bitter. India is a sad chapter in their annals, just as America is in ours, and it is not, as in the latter case, sweetened by the thought that the victors were of their own race.

It is impossible, too, not to feel pity for Du Perron in his lonely and poverty-stricken old age. He seems to have had little sympathy with the Revolution. His heart was with the East, and he shut himself up among his books. There is an extraordinary passage in the beginning of the 2nd volume of the *Oupnekat* (Upanishads), where he addresses the sages of India. The *Biographie Universelle* is so unkind as to put it in French, in which dress it looks doubly strange. It really is in Latin, and begins with an

### ANQUETIL DU PERRON

INDIOE SAPIENTIBUS

*Salutem Dat.*

He then proceeds to tell them that his life is as abstemious as theirs, that his daily food and dinner is but bread and cheese and well-water, costing only four sous, or the 12th part of a rupee. This rupee, it should be remembered, would be not the Company's rupee, but the old Sikka.\* Anquetil states, p. I. 503, that this rupee was valued in the French Factories at 48 sous (*quarante-huit sols*) or half-pennies, *i e.*, 2s. Thus his daily food cost him about two pence, or between five and six pice.

Continuing, he tells the Brahmans that he has no fire or water and no quilt on his bed, and then adds a particular which sounds rather shocking even in Latin, and which, I observe, that his elder brother omits and prudently marks with asterisks, when writing his notice of Anquetil:

*Nulla corporis lintei lotio vel mutatio.*

No washing or changing of my body linen. I hope this means merely that he had no linen. But anyhow it is a queer statement to make, and a queer recommendation of himself to Brahmans who, he must have known, were most particular about bodily cleanliness. But I suppose he meant to describe himself as a Faqir, or Sanyassi.

For the gratification of the curious, I have given the passage in its original dress.

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\* He mentions I. 504 that at Surat dried almonds from Basra were used for the same purpose as cowries in Bengal. In 1760 2,400 such almonds were equal to a rupee.

Haec autem ab homine, quasi contribuli vestro scripta, haud dedignamini; Viri Sapientes, quis sit meus vivendi modus audite, quaeso. Cibi quotidiani, e pane, paululo lacte aut caseo, et puteali aquâ solum constantis, impensa, quatuor Gallicarum assium est, seu Indicae roupie 12ae partis; ignis hieme, supra lecto culcitae, linteï usus incognitus, nulla corporis linteï lotio, mutatio, sine ullo reditu, ullâ attributione, ullo munere, pro aetate et ante acto labore satis valens, litterariis operibus victum quaero; uxoris, nati, famuli, omnium hujus mundi bonorum, vinculorum expers et immunis, solus, absolute liber, etsi omnium hominum, imprimis proborum amantissimus, in hoc statu durum cum sensibus bellum gerens, mundi spretis si non omnino victis illecebris et invitamentis, alacri animo ad Ens supremum, perfectum, assiduo nisu anhelans, corporis solutionem, a meta non longe distans, tranquillâ mente opperior.

Vestrum sanè, quamvis fide, religione divisum, saltem morali et philosophico habitu plene similem libenter agnoscetis; et eâ fiducia intimam vobis mentem aperio.

It has been well said by Sir Erskine Perry, in his sympathetic and honourable notice, that "a debt of justice is due to Anquetil Du Perron from an English pen. There are few instances in the annals of literature in which greater devotion to the cause of letters has been shown, greater difficulties have been overcome, or greater philobiblical results achieved, than in the case of the translator of the Zendavesta. The discovery and translation of works and tongues unintelligible to Europe, and dating from a remote antiquity, are services of no light significance." And he observes, "nothing can justify the want of courtesy and the unfair criticism displayed by Sir William Jones in his letter," adding in a note the remark of Rask that the letter is "Eine Neidschrift voll gift und gall, und desverfassers Namens durchaus unwürdig." A few days before his death, Du Perron said to his medical attendant that he was bound for a longer voyage than any he had hitherto taken, but that he did not know what port he would arrive at. He died at the age of 75, in the house of his elder brother, who wrote a short notice of him, and he had the honour of a funeral address from the illustrious Silvestre de Sacy.

I have now completed my sketch of the life of Anquetil Du Perron, and it remains to make some general remarks on his character and achievements. I do not think that I can claim for him that he was a great man, or a sound scholar. He was too uncontrolled, and too deficient in patience for these things. But I think I may claim for him the distinction of being an eminently picturesque and interesting personage. He was no bloodless chamber student, buried among his books like Scaliger or Casaubon, nor was he one ever "voyaging



through strange seas of thought, alone." He was a living, active-minded man, alive at every pore and swayed and tossed by his impulses and the *fougue* of youth. In his enthusiasm and single-mindedness, he may well be compared to our great missionaries, Xavier and Henry Martyn. Perhaps the title of Scholar-Missionary is that which suits him best, and in this capacity he showed an intrepidity and a resource which places him, to my thinking, far above the most placid President who ever sat in the *fauteuil* of the most erudite society of Europe. It is easy to throw contempt on the result of his researches, and to ridicule the silly utterances of the world's childhood as revealed in the *Zend*; but, as Du Perron has well said, "*L'amour de la vérité ennoblit et fait goûter le travail le plus insipide.*" When we think of his starting off for the East as a recruit of the French East India Company, and of that wonderful march of his from Behar to Pondicherry, we are reminded of those Chinese pilgrims, who braved countless dangers to visit the Buddhist shrines, and feel disposed to apply to him the description which the first Missionary gives of his labours. "In journeyings often, in perils of robbers, in perils from my countrymen, in perils from the Gentiles, in perils in the city, in perils in the wilderness, in perils in the sea, in perils among false brethren, in labour and travail, in watchings often, in hunger and thirst, in fastings often, in cold and nakedness." No doubt, he had his faults, and some of them big ones. With a great love for his fellow-men in the abstract, he seems not to have been able to live with the small section with which he was in immediate contact. Yet, though we cannot say that even his failings leant to virtue's side, we may recognise the fact that they were to some extent the cause of his achievement. There is a French phrase in frequent use about the defects of one's qualities, and perhaps we might reverse this, and speak of the qualities of one's defects. If Du Perron had not been impatient of restraint, and of a *dour* disposition, he would never have gone to India as he did, or made his pilgrimage from Colgong to Surat. As he himself says, in speaking of his hurried and almost secret departure from Chandernagore: "I left everything at Chandernagore and went off to Cossimbazar, which I reached in four days. This step, taken without the knowledge of the Governor, was blamed; but, if it was the cause of the unhappy catastrophes which embittered part of my stay in India, on the other hand I owe to it my knowledge of the Peninsula, and the acquisition and translation of the works of Zoroaster." He was of an unaccommodating temper, *peu liant* is his own phrase, and at page 55 he gives a revelation of himself while speaking of his rejection at Murshi-

dabad of a fellow-countryman's offer of hospitality, "j'ai toujours plus craint les services que les mauvais offices." No doubt he was too young and impetuous for his spirit always to keep the serene height to which it was capable of ascending. I have sometimes thought it was a pity that his friends saved him from carrying out his purpose of sailing to India as a private soldier. As is well known, an illustrious scholar of our own day, the late Mr. Blochmann, executed this plan and with the happiest results. Du Perron's strong constitution and healthful early training would probably have borne him scatheless, or nearly so, through the hardships and the perils of disreputable companionship, and he might have learnt lessons of discipline and endurance which would have been invaluable to him in after life. He would have given the world a vivid picture of a French soldier's career in India, and might have shared the dangers of his countrymen at Chandernagore and Pondicherry, where his courage and ability could have been of material service to them. As it was, he is obliged to confess that he never was able to repay the French East India Company and their officers for their liberality and kindness to him. His appointments were not excessive, for he never drew more than Rs. 100 a month in India, yet the Company gave him a free passage to India, and supported him there, and it is pleasant to find him expressing his gratitude to the Company and to De Leyrit for doing so much for him, seeing that he had never been of the smallest service to their Factories. His great mistake was, I think, his leaving India so soon, and this was partly the result of his having no official position, or means of gaining his livelihood. But something must be attributed to the inequalities of his temperament, and his want of staying power. If he could have been content with sending his MSS. home, and had carried out his intention of going to Benares and studying Sanskrit there, he might have given the world an adequate translation of the Zendavesta. He had far more brilliancy, but he lacked perhaps the dogged pertinacity and austere composure of that excellent Tyrolese, Father Tiefenthaler,\* who came out to India in 1743 and re-

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\* The mention of Tiefenthaler naturally leads to a reference to one of the great services to India performed by Anquetil Du Perron. He, so to speak, discovered Tiefenthaler, and entered into correspondence with him as far back as 1759. Tiefenthaler's description of India was edited by John Bernouilli, Astronomer Royal to the King of Prussia, in 1786, and dedicated to the King of Sweden. In his preface Bernouilli mentions that he first knew of the existence of Tiefenthaler's book from an article contributed by Du Perron to the *Journal des Savans* in 1776. This led him to enquiries, in the course of which he found that Tiefenthaler's work was at Copenhagen with M. Kratzenstein, Professor of Medicine there, and



mained there till he died, full of years, at Agra. He, too, arrived at Surat, and staid there for some time, and he also, after five and twenty years' residence, found himself in danger of starving, and had recourse to the protection of the English.

Du Perron's Personal Narrative contains many interesting passages and deserves reprinting. To my thinking, his account of India is more graphic than Bernier's, who has perhaps been rather overpraised. Bernier has some very valuable information, and some of his descriptions are lively, but a good deal of his two volumes is rather heavy, and one thinks that, with his opportunities, he should have been able to give us much more. He was afraid, I suppose, of writing a big book.

Du Perron has an amusing account of England and London. He is very severe on the bad condition of the London streets, telling us that, when once he put his head out to direct the hackney coachman, he was so jolted that his head banged several times from side to side of the window. He is very complimentary, I am glad to say, to the English ladies, gallantly observing that he should have liked to stay longer in England to study them in the country. They remain there, he says, for months, all alone, employed in reading, or in some romantic love-affair. Though young and charming, they are also intellectual, and a man can enjoy the pleasure of having a sensible conversation with them. The English men, he adds, are far from resembling them. They are *trop faits*, too complete and finished when they are young, and they lose in London the polish which they have painfully acquired in Paris, while on their estates they grow so boorish as to become quite unrecognizable.

H. BEVERIDGE.

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who had received it from M. P. J. Flohr, Surgeon to the Danish Factory at Patna (?), who had been much associated with Tiefertenthaler. Unfortunately two other works by Tiefertenthaler seem to have been altogether lost. Perhaps, however, they may yet be discovered and published. Du Perron contributed some valuable dissertations and notes to Bernouilli's edition, and also sent him Tiefertenthaler's maps, which had been received by him in 1776. At Vol. II, p. 419, there is an interesting letter from Tiefertenthaler to Du Perron, dated 17th May 1759, in which he mentions that he was born at Bolzano in the Tyrol, and describes his studies. In 1776 he was at Fyzabad. I recollect to have seen a reference to Tiefertenthaler in one of Colonel Wilford's papers, in which he speaks of him as a truthful man and of austere disposition.

ART. VI.—RELIGION AND MORALITY.  
[THE CONTRADICTIONS OF EMPIRICAL MORALITY]

BY

COUNT LEO TOLSTOI.

TRANSLATED BY CHARLES JOHNSTON.

(*Independent Section.*)

I.

YOU have asked me what I understand by the word religion ; and whether I consider morality, independent of religion as I understand it, possible. I shall try to the best of my ability to answer these supremely important and admirably formulated questions as well as possible.

Among the great majority of the cultured class to-day, it is considered as proved that the basis of every religion is a personification and deification of the mysterious forces of nature, arising out of a superstitious terror of these forces of nature, and a bowing down before them.

This opinion is accepted without criticism, on faith, by the cultured classes of our time, and not only meets with no opposition from men of science, but even, for the most part, finds amongst them its strongest supporters. If at rare intervals voices, like Max Müller's and others, are raised in opposition, voices attributing to religion another origin and purpose, these voices are neither heard nor heeded in the general and unanimous recognition of religion as an outgrowth of superstition. Not long ago, in the beginning of the present century, the foremost men of the time, even if they denied Catholicism and Protestantism, as the Encyclopedists did, at the end of the last century, still none of them denied that religion in general was and is an indispensable condition of life for everyone. Not to mention the Deists, like Bernardin de St. Pierre, Diderot and Rousseau, Voltaire built a monument to God, and Robespierre appointed a festival to the highest Being. But in our times, thanks to the light-minded and superficial teaching of Auguste Comte, who, like most Frenchmen, sincerely believed that Christianity is nothing but Catholicism, and hence saw in Catholicism a full realisation of Christianity, it has been decided and accepted by the cultured class, always ready and willing to accept the very lowest propositions, it has been decided and recognised that religion is only a well-known and long-exhausted phase of human development. It is recognised that humanity has already lived through two periods—



the religious and the metaphysical, and has now entered the third and highest, the scientific, and that all manifestations of religion among men are only a survival of a once necessary spiritual organ of humanity, which has long ago lost its purpose and meaning, like the nail on the horse's fifth toe. It is recognised that the reality in religion consists in the terror called forth by the mysterious forces of nature, the recognition of imagined beings, and a bowing down before them, as Democritus thought in antiquity, and as the newest philosophers and historians of religion affirm.

But, not to mention that a recognition of supernatural beings, or being, did not and does not always arise from terror of the mysterious forces of nature, as is proven by hundreds of the very foremost and most highly educated men of the past, the Socrates, the Descartes, the Newtons, and like men of our own time, who recognised the highest supernatural Being in no wise from terror of the mysterious forces of nature, the affirmation that religion grew out of men's superstitious terror of the mysterious forces of nature in reality gives no answer to the main question, whence arose the representation of invisible, supernatural beings in men's minds?

If men had feared thunder and lightning, then they would have feared thunder and lightning; but why should they have invented an invisible supernatural being, a Jupiter, who dwells somewhere and sometimes hurls thunderbolts amongst the people?

If men had been awe-struck at the sight of death, then they would have feared death; but why did they "invent" the souls of the dead, with whom they began to enter into imagined relations? People might have hidden, from fear of thunder, they might have fled from death, through horror of death, but they invented an eternal and powerful being whom they feel dependent on, and living souls of the dead, not from fear only, but from some other reasons. And in these reasons, clearly, consists the reality of what is called religion. And, besides this, everyone who, if only in childhood, has experienced religious feeling, knows from his own experience that this feeling was always called up in him, not by terrible outward material appearances, but by an inward recognition of his own insignificance, loneliness, sinfulness, which had nothing in common with dread of mysterious forces of nature. Hence anyone may discover, both by external observations and by personal experience, that religion is not a bowing down before gods called forth by a superstitious dread of the mysterious forces of nature, rightly belonging to men only at a certain period of their development, but something entirely independent of dread, and of the stage of men's culture, some-

thing that cannot be done away with by any development of enlightenment, since man's recognition of his limitation in the midst of a limitless universe, and of his sinfulness—his not having fulfilled all that he might have and ought to have done, but has not done—, always existed and always will exist while man remains man.

In truth every man, as soon as he grows out of the animal condition of infancy and early childhood, during which he lives guided only by the demands made on him by his animal nature, every man wakening to reasoning consciousness cannot but remark that all around him lives, renewing, undying, and incessantly obeying one clear eternal law; and that he alone, recognising himself as separate from the whole living world, is destined to death, to vanish in limitless space and endless time, and to a torturing consciousness of responsibility for his faults—to a consciousness that, acting ill, he might have acted better. And, understanding this, every reasonable being cannot but fall athinking, and asking himself:—to what end is his momentary, indefinite, and wavering existence in the midst of this eternal, strongly defined, and endless world? On entering real human life, a man cannot pass this question by.

This question stands perpetually before every man; and every man must give it one or another answer. And it is exactly the answer to this question that makes the reality of every religion. The reality of every religion consists solely in the answer to the question,—to what end do I live, and what is my relation to the endless world surrounding me?—For all the metaphysics of religion, all teaching about deities, about the origin of the world, are only signs accompanying religion, and differing according to geographical, ethnographical, and historical conditions. There is no religion, from the loftiest to the coarsest, that had not as its foundation this fixing of the relation of man to the world that surrounds him, or to its first cause. There is no religious rite, however coarse, and no cult, however refined, which has not this same foundation. Every religious teaching is the expression, by the founder of the religion, of the relation in which he recognises himself, as a man, and, in consequence of this, all other men, as standing towards the universe, or towards its source and first cause.

Expressions of these relations are manifold, according to the ethnographical and historical conditions in which the founder of the religion and the people that accepts it find themselves; and moreover these expressions are interpreted differently and disfigured by the followers of the teacher, generally hundreds and sometimes thousands of years, in advance of the understanding of the masses; hence of expressions of man's relation to the world—of religions—there are seemingly very many;



but, in reality, of fundamental relations of man to the universe, or to its source, there are only three : the primitive personal ; the pagan social ; and the Christian, or divine.

Speaking strictly, of fundamental relations of man to the universe, there are only two : the personal, consisting in a recognition of the purpose of life in the well-being of the personality, taken separately, or in union with other personalities ; and the Christian, that recognises the purpose of life as a service of the Power that sent man into the world. For the second relation of man to the universe—the social—is in reality only an extension of the first.

The first of these relations, the oldest of all, now met with among people standing on the very lowest step of development, consists in this, that man recognises himself as a self-sufficing being, living in the world to obtain the greatest possible amount of personal well-being in it, independently of how much the well-being of other beings may suffer thereby.

This first relation to the universe, in which every child finds itself on entering life ; in which humanity lived in the first, the pagan, stage of development, and in which many separate individuals of coarse moral fibre, and savage peoples, still live,—is the source from which all ancient pagan religions spring, as well as the lower forms of later religions in their corrupted form ; as Buddhism, Tao-ism, Mahomedanism, and others. Buddhism, although demanding from its followers a renunciation of the good things of the world, and even of life itself, is founded on this same basis of the self-sufficing personality destined to well-being, and its relation to the world around it, only with the difference that pure paganism recognises the right of man to enjoyment, while Buddhism recognises his right to the absence of suffering. Paganism holds that the world must afford enjoyment to the personality ; Buddhism holds that the world must disappear, since it causes the suffering of the personality. Buddhism is thus only negative paganism. From the same relation to the universe, the newest spiritism, which has as its basis the preservation and continued well-being of the personality, also takes its rise. All pagan cults are deifications of beings who follow personal enjoyment exactly as men do ; all offerings and prayers for the gifts of earthly well-being spring from this same relation to the universe.

The second pagan statement of man's relation to the universe, the social, which raises them to the next stage of culture, the relation which is the peculiar property of those who have reached manhood, consists in this, that the meaning of life is recognised, not in the well-being of a single, separate personality, but in the well-being of a certain group of personalities, a family, a tribe, a nation, even the whole of humanity, as in the attempted religion of the Positivists.

The purpose of life, in this relation of man to the universe, is transferred from the personality to the family, tribe, or nation, to a certain group of personalities, whose well-being is thus recognised as the aim of existence. From this relation spring all the patriarchal and social religions of the same character, the religions of China and Japan, the religion of the Chosen People—the Hebrews—the imperial religion of the Romans, and the proposed religion of Humanity, of the Positivists. All forms of ancestor worship, in China and Japan, the worship of the Emperor in Rome, are built on this relation of man to the universe.

The third relation of man to the universe, the Christian, that in which every old man involuntarily feels himself, and which, in my opinion, humanity is now entering, consists in this, that the meaning of life is recognised by man, no longer in the satisfaction of his personality or the satisfaction of a certain group of people, but only in service of the will which produced him and the whole world, not for their own purposes, but for the purposes of this Will. From this relation to the universe arose the highest religious teaching we are acquainted with, the beginnings of which already existed among the Pythagoreans, the Therapeuts, the Essenes, the Egyptians, the Persians, the Brahmans, the Buddhists, and the Tavists, in their higher representatives, but which has received its fullest and highest expression only in Christianity, in its true, uncorrupted meaning.

All possible religions whatsoever inevitably fall under one of these three relations of man to the universe. Every man who has risen above mere animalism, inevitably recognized one of these three relations, and in this recognition consists the true religion of every man, quite regardless of the confession to which he professes a nominal adherence.

Every man must infallibly represent the relation of the universe to himself in some way or other, because a reasoning being cannot live in the universe that surrounds him, without having some relation or other to it. And since of such relations to the universe, worked out by humanity, and known to us, there are three only, every man inevitably accepts one of the three existing relations, and, whether he will or no, belongs to one of the three fundamental religions among which the whole of humanity is divided.

And therefore the widely extended conviction of people of the cultured class in Christendom, that they have raised themselves to such a height of development that they no longer need any religion at all, and have no religion, in reality arises from the fact that these people, not recognising the Christian religion, the only religion which is proper to our time, really



retain a lower religion, either the social, or the primitive pagan religion, without knowing it themselves. A man without a religion, that is, a man without a relation to the universe, is as impossible as a man without a heart. He may not know that he has a religion, just as he may not know that he has a heart, but, just as he cannot live without a heart, so he cannot live without a religion. Religion is the relation in which a man recognises himself towards the limitless universe that surrounds him, or towards its source and first cause; and a reasonable being cannot but find himself in some relation to the universe.

But you will say, perhaps, that the ascertaining of man's relation to the universe is the business not of religion, but of philosophy, or of science in general, if philosophy be regarded as a part of science. I do not think so. I think, on the contrary, that the proposition that science in general, including philosophy as a part of science, can ascertain the relation of man to the universe, is completely false, and serves as the chief reason of the confused understanding of religion, science, and morality which exists in the cultivated classes of our society.

Science, including philosophy, cannot ascertain man's relation to the limitless universe, or to its source, for one sufficient reason, that, before any philosophy or science could arise at all, there must have existed already one or other relation of man to the universe, since, without this, no activity of thought is possible.

Just as a man cannot find the direction in which he ought to move—and every movement inevitably takes place in some direction—by means of any movement whatsoever; in exactly the same way it is impossible, by means of the intellectual work of philosophy or science, to find the direction in which this work ought to be done; every activity of the intellect inevitably takes place in some already given direction. And the direction for every intellectual activity is always pointed out by religion. All philosophies known to us, from Plato to Schopenhauer, inevitably followed the direction given to them by religion. The philosophy of Plato and his successors was a philosophy of paganism, investigating the means of obtaining the greatest possible well-being for the single personality, as well as for groups of personalities, in kingdoms. The philosophy of the Middle Ages, which springs up from the same pagan understanding of life, investigated the means of salvation for the personality, that is, the obtaining of the greatest possible well-being for the personality in a future life, and only in its theocratic essays treated of the construction of society.

Recent philosophy, whether Hegel's or Comte's, has as its basis the Social-religious understanding of life. The pessimistic philosophies of Schopenhauer and Von Hartmann, wishing to free themselves from the Hebrew religious world-concept, involuntarily took the religious foundation of Buddhism. Philosophy always was and always will be simply an investigation of what follows from the relation of man to the universe, ascertained by religion, since, until this relation is established, the material for philosophic investigation does not exist.

In exactly the same way, positive science, in the strict sense of the word, always was and will be nothing more than the investigation and study of all subjects and manifestations subject to examination, in accordance with a given relation of man to the universe established by religion.

Science always was and will be, not the study of "everything," as men of science now naively believe, for this is impossible, since the number of subjects presented for investigation is endless, but only the study of what religion designates, in due order, and according to importance, from the whole endless number of subjects, manifestations, and conditions that are open to investigation. Hence there is not one Science, but as many sciences as there are degrees of the development of religion. Every religion selects a certain circle of the subjects offered for study, and hence the science of each separate period and people infallibly wears the character of the religion from the point of view of which it regards these subjects.

Thus pagan science, established during the period of the Renaissance, and flourishing in our society at the present day, always was and continues to be solely the investigation of all those conditions through which man gains the highest possible degree of well-being, and all those manifestations of the world which can provide it for him. The philosophical science of the Brahmans and Buddhists was always the investigation of the conditions in which man is freed from the sufferings that oppress him. Hebrew Science—the Talmud—was always solely the study and elucidation of the conditions which must be observed by a man in order to fulfil his covenant with God, and to preserve the chosen people at the height of its election. The truly Christian science, which is only beginning to be born, is the investigation of the conditions under which man may recognise the demands of the higher Will which sent him, and apply them to life.

Neither philosophy nor science can establish man's relation to the universe, because this relation must be already established before any philosophy or science can begin to exist. They



cannot do this for yet another reason, that science, including philosophy, investigates manifestations by the intellect, and independently of the position of the investigator and the feelings which he experiences. But man's relation to the universe is defined, not by intellect only, but by feeling, by the entire collectivity of man's spiritual forces. However much it is suggested and explained to a man that all that really exists is only ideas, that everything is made up of atoms, or that the reality in life is substance or will, or that heat, light, motion, and electricity are different manifestations of one and the same energy, all this will not make his place in the world clear to man—the feeling, suffering, rejoicing, fearing and hoping being. His place in the world, and therefore his relation to it, only religion shows him, saying to him : the world exists for you, therefore take from life all you can take from it ; or, you are a member of God's beloved people, and will receive, along with your nation, the greatest amount of well-being attainable by you ; or you are an instrument of the highest Will, that sent you into the world to fulfil a work already appointed for you ; recognise this Will and fulfil it, and you will do the best you can for yourself.

To understand given philosophies and science, preparation and study are necessary, but for religious understanding they are not necessary: it is given to every one, even to the narrowest and most ignorant.

In order to understand his relation to the universe that surrounds him, or to its source, a man needs neither philosophical nor scientific knowledge,—extensive knowledge encumbering consciousness, often even hinders it ; the only things necessary are renunciation, even, if temporary, of the vanity of the world, a sense of his own material nothingness, and a truthfulness, met with oftener, as is said in the Gospel, in children and the simplest unlearned people. For this reason we see that very often the simplest, unlearned and uneducated people accept with perfect lucidity, consciously, and easily, the highest Christian understanding of life, while the most learned and cultured people continue to linger in the coarsest paganism. Thus, for example, we find the most refined and highly educated people believing that personal enjoyment is the purpose of life, or at any rate the freeing oneself from suffering, as the very wise and very learned Schopenhauer believed, while a half-educated Russian peasant-sectary, without the slightest effort of thought, recognises the purpose of life as what the greatest sages of the world, men like Epictetus, Marcus Aurelius, Seneca, believed it to be, the recognition of oneself as an instrument of the divine Will, a son of God.

But you will ask me: wherein consists the nature of this

neither scientific nor philosophical capacity of knowledge? If this knowledge is neither philosophic nor scientific, then what is it? How is it characterised? To these questions I can only answer that, since religious knowledge is that on which all other knowledge is founded, and which precedes all other knowledge, we cannot define it, having no organ of definition for it. In theological language, this knowledge is called revelation. And this name, so long as a false meaning is not given to the word revelation, is perfectly right, because this knowledge is obtained neither by study, nor by the efforts of an individual man or men, but only by the reception by an individual man or men of a manifestation of the eternal reason, which gradually reveals itself to mankind.

Why could people ten thousand years ago not understand that the purpose of their life was not exhausted by the well-being of their personalities, and then later came a time when higher understandings of life—family, social, national, imperial,—were revealed to them? Why, within our historic period, was the Christian understanding of life revealed? And why was it revealed precisely to such a man, or to such men, and precisely at such a time, in one and not another place, in one and not another form? To try to answer these questions, seeking a reason in the historic conditions of the time, the life and character of those people, who first accepted this understanding of life and gave it expression, in the special characteristics of those people, is just the same as to try to answer the question why the rising sun illumined first those and not other objects. The sun of truth, rising higher over the world, lightens it more and more, and sheds its light on those objects which first fall under the sun's illuminating rays, and are most capable of reflecting them. The conditions that make some people more capable than others of receiving the rising truth, are not any specially active qualities of mind, but passive qualities of the heart, that rarely co-exist with great and curious intellect—a renunciation of the vanities of the world, a consciousness of their own material insignificance, and truthfulness, as we see in all the founders of religions, who were never distinguished by philosophical and scientific knowledge.

In my opinion, the chief error that, more than all else, hinders the true progress of our Christian humanity, consists precisely in this, that the men of science of our time, who have seated themselves in the seat of Moses, guided by the pagan understanding of the world that was restored at the time of the Renaissance, have decided that Christianity is a condition that men have already lived through, and that, on the contrary, the pagan, social, ancient, and, in reality, outlived



understanding of life, is the one which humanity should inflexibly hold to. Therefore, not only do they not understand true Christianity, which has given us the higher understanding of life, towards which all humanity is moving, but they do not even try to understand it. The chief source of this error lies in the fact that men of science, breaking with Christianity and seeing that it does not correspond with their science, have laid the blame, not on their science, but on Christianity; that is, they have imagined, not the real fact, that their science is eighteen hundred years behind Christianity, which has already taken hold of a great part of contemporary society,—but, on the contrary, that Christianity has fallen. From this exchange of rôles, arises the startling fact that there is no one with a more confused understanding of the real meaning of religion, of morality, of life, than the man of science; and the still more startling fact that the science of our times, while achieving really great successes in its province of investigating the conditions of the material world, shows itself good for nothing, and sometimes even pregnant with harmful consequences, in human life.

And, therefore, I think that by no means science or philosophy, but only religion, can establish man's relation to the universe.

L. TOLSTOI.

*January 1895.*

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## II.

And so, to your first question, what do I understand by the word Religion? I answer: Religion is the establishing by man of a certain relation between himself and the eternal and endless universe, or its source and first cause.

From this answer to the first question, the answer to the second question follows of itself. If religion is the establishing of man's relation to the universe, defining the purpose of his life, then morality is the indication and elucidation of that activity of man which, of itself, follows from one or another relation of man to the universe. And since, of fundamental relations of man to the universe or to its source, only two are known to us, if we regard the pagan social relation as an extension of the personal, or three, if we consider the pagan social relation as distinct, then of forms of moral teaching there can similarly be only three—the primitive, savage, personal moral teaching, the pagan or social moral teaching, and the Christian moral teaching, that is, the service of Deity or the divine.

From the first relation of man to the universe spring the teachings of morality common to all pagan religions, having as

their basis the personality's striving toward well-being, and in consequence defining all conditions that give the greatest amount of well-being, and indicating the means of securing this well-being. From this relation to the universe spring moral teachings like the Epicurean in its lowest form, the Mahomedan moral teaching, promising coarse well-being to the personality in this and the other worlds, and the teaching of worldly, utilitarian morality, which has as its aim the well-being of the personality in this world alone.

From this teaching also, which considers the aim of life to be the well-being of the separate personality, and hence the freeing of the personality from suffering, spring the moral teachings of Buddhism in its coarse forms, and the worldly teaching of Pessimism.

From the second pagan relation of man to the universe, which considers the aim of life as the well-being of a certain group of personalities, spring the moral teachings which demand from the individual the services of that group whose well-being is recognised as the aim of life. According to this teaching, the enjoyment of personal well-being is permitted only to the measure in which it is attained by the whole community which forms the religious basis of life. From this relation spring the forms of moral teaching known to us in the old Roman and Greek world, where the personality always sacrificed itself for the society, and also the morality of China ; from the same relation springs the morality of the Hebrews, the subordination of the individual's well-being to the well-being of the chosen people, and the morality of our own time, which demands the sacrifice of the personality in the interest of the well-being of the majority. From this same relation to the universe springs the morality of the majority of women, sacrificing their personalities entirely for the well-being of the family, and, more than all, of the children.

All ancient history, and mediæval and modern history in part, are full of the miracles of this family and social morality. And at the present time, the great majority of people, only fancying that, in confessing Christianity, they follow Christian morality, in reality follow only pagan morality, and set up this morality as the ideal for the education of the young generation.

From the third, the Christian relation of man to the universe which consists in the recognition of himself by man as an instrument of the Supreme will for the fulfilling of its aims, flow the moral teachings corresponding to this understanding of life, elucidating the dependence of man on the Supreme will, and defining the requirements of that will. From this relation of man to the universe spring all the highest moral teachings



known to humanity, the Pythagorean, the Stoic, the Buddhist, the Brahman, the Tivist, in their highest manifestations, and the Christian, in its real sense, demanding the renunciation of personal will, and of the well-being, not only of the personality, but of the family and society also, in the name of the fulfilling of the will, revealed to us in our consciousness, of the power that sent us into the world. From the first, second, or third relation to the limitless universe or its source, springs the real, unassumed morality of every individual, without regard at all to what he confesses or professes nominally, as morality, or what he wishes to appear.

Hence anyone who recognises the reality of his relation to the universe, as the gaining for himself of the greatest possible well-being, however much he may say that he considers it moral to live for his family, society or nation, or for humanity, or for the fulfilling of the divine will, may artfully pretend before men, deceiving them, but the real motive of his activity will always be only the well-being of his personality, so that, when a choice becomes inevitable, he will sacrifice not his personality to the family, the nation, the fulfilling of the divine will, but everything to himself, because, seeing the purpose of his life only in the well-being of his personality, he cannot act otherwise until he changes his relation to the universe.

In just the same way, whatever may be said by any one whose relation to the world consists in service of the family—as is for the most part the case with women—, or race, or nation—as is the case with members of an oppressed people, or political actors in times of struggle, however much he may say he is a Christian, his morality will always be social and national, and not Christian; and when a choice becomes inevitable between the well-being of the family or society, and the well-being of his personality, or the well-being of the society, and the fulfilling of the will of God, he will inevitably choose the service of the well-being of that group of people for which, according to his view of the universe, he exists, because in this service alone he sees the purpose of his life. And exactly in the same way, however much it may be suggested to one who recognises his relation to the world in the fulfilling of the will of the Power that sent him, that, in accordance with the demands of personality, family, race, or humanity, he must perform actions contrary to the supreme will recognised by him in the qualities of reason and love dwelling in him, he will always sacrifice all his human relations in order to fulfil the will of the Power that sent him into the world, because he sees the purpose of his life only in the fulfilment of this will.

Morality cannot be independent of religion, because it is not only a consequence of religion—that is, of the relation in which a man recognises himself towards the universe—but is already included, implied, in religion. Every religion is an answer to the question, what is the purpose of my life? And the religious answer already includes in itself a certain moral demand, which may sometimes arise after an elucidation of the purpose of life, sometimes before it. To the question of the purpose of life, this answer may be given: the purpose of life is the well-being of the personality, wherefore lay hold of all the well-being you can; or the purpose of life is the well-being of a group of people, wherefore serve this group of people with all your force; or the purpose of life is the fulfilling of the will of the Power that sent you, wherefore with all your forces strive to recognise this will and fulfil it. Or this question may be answered thus: the purpose of your life is your personal enjoyment, since this is the meaning of mankind; or the purpose of your life is the service of the group of which you consider yourself a member, since this is the meaning of your being; or, the purpose of your life is the service of God, since this is the meaning of your being.

Morality is included in the explanation of life given by religion, and therefore can in no wise be independent of religion. This truth is especially evident from the attempts of non-Christian philosophers to derive the teaching of the highest morality from their philosophy. These philosophers see that Christian morality is indispensable, that life is impossible without it; more than this, they see what this morality is, and desire in some way to connect it with their non-Christian philosophy, and to put the matter in such a light that Christian morality shall seem to flow from their pagan or social philosophy. And this they attempt to do, but exactly these attempts, more evidently than anything else, show not only the independence, but even the complete contradiction between Christian morality and pagan philosophy.

Christian ethics—which we recognise as the consequence of our religious view of the world—demand not only the sacrifice of the personality to the collectivity of personalities, but demand the renunciation of one's own personality and of the collectivity of personalities in the service of God; pagan philosophy investigates only the means of obtaining the greatest well-being of the personality or collectivity of them, and hence the contradiction is inevitable. To hide this contradiction, there is only one way—to heap up abstract conditional ideas one upon the other. Thus the philosophers since the Renaissance, for the most part, proceeded, and to this circumstance—the impossibility of reconciling the Chris-



tian morality which they had already accepted, with a philosophy derived from a pagan basis—must be ascribed the frightful abstractness, obscurity, unintelligibility, and estrangement from life of the new philosophy. With the exception of Spinoza who sets out in his philosophy from a religious, and—although he did not count himself a Christian—a truly Christian, basis, and the great genius of Kant, who simply made his ethics independent of his metaphysics, all the other philosophers, even the brilliant Schopenhauer, evidently invent an artificial relation between their ethics and their metaphysics.

It is felt that Christian ethics are something given beforehand, standing absolutely firmly and independently of philosophy, and not needing the fictitious supports placed under it, and that philosophy simply invents propositions in which the given ethics would not contradict it, but would be connected with it, and, as it were, flow from it. But all these propositions seem to confirm Christian ethics only so long as they remain entirely abstract. As soon as they are transferred to questions of practical life, not only the non-agreement, but even the evident contradiction, of the basis of philosophy with what we recognise as morality, becomes fully evident.

The unfortunate Nietzsche, who became so famous recently, is especially valuable as a personification of this contradiction. He is uncontradictable when he says that all rules of morality, from the point of view of existing non-Christian philosophies, are simply lying and hypocrisy, and that it is much more profitable, pleasant, and wise to form a community of *Uebermenschen*, and to be one of them, rather than of the crowd which must serve as the stage of these *Uebermenschen*. No possible construction of philosophy, issuing from a pagan religious view of the world, can demonstrate to a man that it is more profitable and reasonable for him to live, not for his own desirable, intelligible and possible well-being, or for the well-being of his family, his society, than for some other undesirable, unintelligible well-being, unattainable by the insignificant powers of mankind. Philosophy, based on an understanding of life which confines itself to human well-being, will never be in a position to prove to a reasonable man, who knows that he may die any minute, that it is good and right for him to forego his own desirable, intelligible and undoubted well-being, not even for the well-being of others, because he can never know the consequences of his sacrifice, but simply because it is good and right—that it is the categorical imperative.

To demonstrate this from the pagan philosophic point of view is impossible. To demonstrate that men are all equal, that it is better for a man to give his life to the service of

others, rather than to make others serve him, treading their lives under foot, our relation to the universe must be otherwise defined : it must be shown that man's position is such that there is no other course open to him, because the purpose of his life lies only in fulfilling the will of the Power that sent him ; and the will of the Power that sent him is that he should give his life for the service of men. And such a change of man's relation to the universe is given only by religion.

Just the same with attempts to derive and reconcile Christian morals with the fundamental positions of pagan science. No sophisms or turns of thought can make away with the clear and simple proposition that the law of evolution, lying at the base of all the science of our time, rests on the general, eternal and unchangeable law—on the law of the struggle for existence and the survival of the fittest, and that therefore every individual, to attain his own well-being or the well-being of his society, must be that fittest, and must make his society such, in order that not he and his society, but some other, less fit, may perish.

However much certain naturalists, frightened at the logical conclusions from this law and their applications to human-life, may try to extinguish this law with words, to talk it away, all their attempts will only make more evident the irresistibility of this law, which guides the life of the whole organic world, and hence also the life of man, considered as an animal.

At the moment when I was writing this, appeared the Russian translation of an article by Mr. Huxley, which consists of a discourse on evolution and ethics, read by him before an English society.

In this article, the learned professor, like our own famous Professor Bekétoff a few years ago, and like many others, writing on the same subject, and with the same want of success as his predecessors, tries to show that the struggle for existence does not destroy morality, and that, while the law of the struggle for existence is recognised as the fundamental law of life, morality not only can exist, but is even perfected. Mr. Huxley's article is filled with all manner of jests, verses, and general views on the religion and philosophy of the ancients, and, in consequence of this, is so involved and confused that only with the greatest difficulty can one get at its fundamental thought. This thought, however, is as follows : the law of evolution is contrary to the law of morality, this was known to the ancients of the Greek as of the Indian world. And the philosophy and religion of both peoples brought them to the teaching of self-renunciation. This teaching, in the author's opinion, is wrong ; but the true



teaching is as follows : There is a law, which the author calls a cosmic law, by which all beings struggle amongst themselves, only the fittest surviving. To this law is subject man also, and, thanks only to this law, man has become what he now is. But this law is contrary to morality. How to reconcile this law with morality ? In this way : there exists a social progress, which strives to restrain the cosmical process, and to substitute for it another process—the ethical—the aim of which is the survival, not of the fittest, but of the best in an ethical sense. Whence arose this ethical process, Mr. Huxley does not explain, but in his nineteenth note says that the basis of this process consists in the fact that men, as well as animals, on the one hand love to dwell in societies and restrain in themselves the qualities that are injurious to society, and on the other that members of societies forcibly restrain actions which run counter to the well-being of society. It appears to Mr. Huxley that this process, which leads people to overcome their passions for the preservation of the collectivity of which they are members, and the fear of being punished for destroying the order of this collectivity, is the very law of ethics, the existence of which he has to demonstrate.

Morality is something perpetually developing and growing, and hence the not injuring the established rules of a certain society, and the supporting of them by any external means whatever—means which Mr. Huxley speaks of as the instruments of morality—will be not only no confirmation, but even a destruction of morality. Every cannibal, who ceases to devour his fellow-beings, and acts in harmony with this, breaks the order of his society. There can be no doubt that every really moral action which advances morality, will always be a breach of the order of society. And hence, if a law has appeared in society according to which people sacrifice their own profit to preserve their society, this law is not a law of ethics, but, for the most part, on the contrary, a law contrary to all ethics, the very same law of the struggle for existence, only under a hidden, latent form. This is the same struggle for existence, only transferred from individuals to collectivities. This is no cessation of the struggle, but a drawing back of the hand, only in order to strike more forcibly.

If the law of the struggle for existence and the survival of the fittest is an eternal law of all that lives—and it cannot but be recognised as such for man regarded as an animal—, then no confused arguments about social progress and the ethical law which flows out of it, and, like a *deus ex machina*, springs forth from we know not where exactly when we needed it, can destroy the law of the struggle for existence.

If social progress, as Mr. Huxley assures us, gathers people

into groups, then the same struggle and the same survival will take place between families, races, nations ; and this struggle will not only not be more moral, it will be even crueller and more immoral, than the struggle of personalities, as we see in actuality.

Even if we admit the impossible—that, by social progress alone, all humanity will, after thousands of years, be united in a single unit, will compose a single nation and a single State, even then—to say nothing of the fact that, when the struggle between nations has come to an end, it will become a struggle between humanity and the animal kingdom—the struggle will still remain a struggle, that is an activity which radically excludes the possibility of what we have recognised as Christian morality. To say nothing of this, even then the struggle between personalities, gathered into collectivities, and between collectivities—families, races, peoples—will not diminish in the least, but will only take place in another form, as we see is the case in every union of people into social groups. Members of families quarrel and struggle among themselves as much as outsiders, and even more and more bitterly.

Exactly the same in a State : between people living in a State, there is exactly the same struggle as between people living outside the State, only in different forms. If the weaker are saved within the family and within the State, this is not at all owing to their social union, but owing to the fact that there is self-renunciation and love, in the people who are united in families and States. If, outside the family, of two children only the fittest survives, while in the family of a good mother both continue to live, this follows not at all from family union, but because of love and self-renunciation in the mother. And neither love nor self-renunciation can by any means flow out of social progress.

To affirm that social progress produces morality is like affirming that stove-making produces heat.

Heat comes from the sun, and the stove produces heat only when it contains fuel—the work of the sun. Exactly in the same way, morality flows out of religion. Special forms of life produce morality only then, when into these forms of life enter the results of religious influence on men—morality. Stoves may be lit and so give heat, or not be lit and so remain cold, and in exactly the same way contain morality within themselves, and so act morally on people, or not contain morality within themselves, and so remain entirely without moral influence on society.

Christian morality cannot be founded on a pagan understanding of life, and cannot be derived from non-Christian philosophy or science ; not only cannot be derived from them, but cannot even be reconciled with them.



This was always understood by every serious, strict and logical philosophy or science: "Our propositions will not harmonise with morality, so much the worse for morality," quite rightly say such philosophy and science, and continue their investigations.

Ethical treatises not based on religion, and even lay catechisms, are written and taught, and people may think that humanity is led by them; but this only seems so, because in reality people are led not by these treatises and catechisms, but by religion, which they always had and have, while the treatises and catechisms are only pretences at that which of itself flows out of religion.

The precepts of laic morality, not based on religious teaching, are exactly as if a man, not knowing music, were to take the place of the conductor and wave his hands up and down in front of the musicians who were fulfilling their accustomed task. The music, through inertia, and through what the former conductor had taught, would go on for a certain time; but it is evident that the baton-waving of the man who knew no music would not only be of no benefit, but would, in course of time, inevitably confuse the musicians, and throw the orchestra out. Such confusion begins to fill the minds of the people of our time, in consequence of the attempts of their leaders to give them a morality not based on that highest religion which is beginning to be accepted, and has already in part been accepted, by Christian humanity. Attempts to found morality outside religion are like what children do, when, wishing to transplant some plant that pleases them, they break off the roots that they do not like and that seem useless to them, and stick the plant into the ground without roots. Without a religious basis, there can be no real, unsimulated morality, just as without roots there can be no real plant.

And so, answering your two questions, I say, "Religion is a certain relation, established by man between his separate personality and the endless universe, or its source. Morality is the perpetual guiding of life which flows from this relation."

L. TOLSTOI.

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## ART. VII.—ORIGINAL SCIENTIFIC RESEARCH IN BENGAL.

ABOUT six years ago the present writer, in the pages of this *Review*,\* not only lamented the marked want of proficiency of the Natives of India in knowledge of the Natural History Sciences of Zoology, Botany and Geology, but also enquired into the causes of this deficiency of knowledge, and attempted, at the same time, to suggest a few remedies whereby a keener and more enthusiastic spirit of scientific research might be awakened in the minds of Indian youths. It was then remarked that the deficiency in question was all the more regrettable, that the natives of this country had distinguished themselves in every branch of literature, and in every department of science, except Natural History. There are Indians who have distinguished themselves in law, medicine and engineering. There are Indians who have betaken themselves to the study of the physical and the chemical sciences, though they have not distinguished themselves by any brilliant discoveries or original researches therein. There are Indians who are distinguishing themselves by their original researches in mathematics. But it is to be deeply regretted that there is not a single native of India who has achieved distinction by any original research into, or discovery in, Natural History, or at least, who has devoted himself to the study of zoology and botany.

After the lapse of nearly six years a similar complaint has been made by no less a person than Professor Alexander Pedler, Professor of Chemistry, Presidency College, Calcutta, and late President of the Asiatic Society of Bengal. After reviewing, in the course of the Annual Address delivered by him before the Asiatic Society of Bengal on Wednesday, the 5th February, 1896, the contributions which had been made by the Native Members of that learned body during the century of its existence towards the advancement of literary, historical and archæological knowledge, and after taking literary stock of what had been done by them towards promoting original research in the Natural and Physical Sciences, he burst forth into a soul-harrowing lament which cannot but appeal strongly to the sympathies of those amongst us who take an interest in the moral and intellectual well-being of our country. Though the exordium of his speech on this subject is painfully accurate

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\* *Vide* my essay on "The Pursuit of Natural History among the Natives of India" in the *Calcutta Review* for July 1890.



in its details, yet the peroration is so full of hopes of a brighter intellectual dawning—of the awakening of a more enthusiastic spirit of scientific research among our countrymen—that I cannot refrain from quoting it here *in extenso* :—

“In the latter half of the table a comparison is made of the number of published papers written by Europeans and by Native gentlemen. Taking up the numbers relating to papers in Part I, dealing with Languages, Philology, &c., it would appear that in the earlier years of the Society very few native gentlemen were able to contribute to its original work, for only two out of two hundred and seventy-five original papers were by native gentlemen, or roughly, rather less than one per cent. In the decade 1856-65, the papers by native gentlemen had risen to 12 per cent. of the total in this part, and in the following decade to 18 per cent ; in the period 1876-85, this percentage was 22, and in the ten years 1886 to 1895, it again equalled 22 per cent. It is, therefore, clear that a spirit of original research among the native gentlemen of India has been gradually springing up, but though considerable strides have been made, it would still appear that much more progress in this direction should be made before an entirely satisfactory result can be said to have been arrived at.

“The figures showing the production of papers contributed by native gentlemen to the Natural and Physical Science Section of our Journal are, I am extremely sorry to say, the least satisfactory of the whole table. Three papers only out of 409 printed in this section in 1836-45 were by native gentlemen. In the decades 1856-65 and 1876-85, not a single paper by any native gentlemen in Natural or Physical Science was contributed to our Journal, even though 110 and 164 papers were contributed in these periods by European members of the Society. One paper only in this section was contributed by a native gentleman during the period 1866-75. An improvement is, however, noticeable in the last period from 1886-95, for out of a total of 169 papers, 14 papers were written by native gentlemen, or roughly about eight per cent. of the number. It is, however, a decided improvement to have any at all, and we must be thankful to see a commencement in this direction. On examining also these papers, which have thus been contributed by native gentlemen, I regret to have to state that I found there are only three authors for the whole of the fourteen papers, and hence I must conclude that at present the Society only possesses the small number of three native gentlemen who are carrying on research in the Natural and Physical Sciences. Again, also, I find that up to the last year or two the only subject in Part II of our Journal worked at by native gentlemen, and the results of which have been pub-

lished by us, has been the science of Mathematics. I am, however, glad to say that we have within the last two years received some original papers in Chemistry and Physical Science written by native gentlemen, and it is much to be hoped this is only the beginning of a steady increase in this direction, for the cultivation of experimental science in India is a decided want in the present practical and inventive age.

"It is difficult to come to any other conclusion from the foregoing facts than the disheartening one that native gentlemen as a whole have not yet shown any particular aptitude for original research, and that this is true not only with research of a literary nature, but more particularly true of research in the Physical and Natural Sciences. It is sad that this is the case even after high education has been established for so long, and has become widespread throughout India, and even after numerous facilities have been given in various directions for the encouragement of original work. In this connection I cannot help referring to the example of one of our late Presidents, Sir Charles Elliott, who, as you will remember, instituted a prize for the encouragement of scientific research. This is undoubtedly a step in the right direction, and one which is gradually bringing forth good fruit. It is a form of endowment, which it is to be hoped will be followed by many others of a similar nature. It should not, however, have been left for Sir Charles Elliott to lead the way in this matter, and to be up to the present time the only founder of such a scheme. Endowments of this kind ought really to come from native princes and noblemen, and other wealthy native gentlemen, who desire to see the natives of India taking their proper place in extending a knowledge of their own country and of its resources and in widening generally the boundaries of knowledge. I cannot think of any object which is more worthy than this, and I would beg all native gentlemen of wealth who have the true interests of their country at heart to come forward and endow projects, which have as their aim the encouragement of original thought and investigation. We have plenty of education, both elementary and of a more advanced kind, in the ordinary routine of subjects; and we specially have had plenty of more or less theoretical and literary education, and education which excludes many of the practical aspects of modern life; but what is now wanted is encouragement in practical and scientific educational subjects and in technical education. This should extend also to the fostering of higher work and thought in the latter subjects, which can be given by instituting prizes of this nature, or on similar lines. On a larger scale encouragement might be given by the institution of Fellowships in connection, perhaps, with our Universities,



Scientific Societies, Colleges and other places, which will require the carrying on of original work by the holders as necessary condition of the Fellowship, and I would express the hope that we may soon have other endowments like that of Premchand Roychand, whose scholarship, as many well know, is now, on the science side at least, inseparably connected with original investigation. While, therefore, there is this large field remaining to be filled by the efforts of wealthy India, there may be still certain directions in which our Society may use its influence as a body to help forward this most pressing work."

So far as can be inferred from a perusal of the latter portion of the foregoing extract, the main cause assigned by the learned Professor for this want of aptitude for original scientific research appears to be an inherent apathy of the native mind for all literary and scientific work of an original nature. I must, however, dissent from this sweeping generalisation of the learned Professor, that the natives of India are as apathetic regarding the prosecution of original literary research as they are indifferent towards advancing the progress of scientific knowledge by the discovery of new scientific facts. On the contrary, Indian scholars have enriched the sciences of Indian Archæology and Epigraphy by many important light-bringing discoveries, which have been of great use in elucidating many a dark problem in Indian history and chronology. If any proof be needed of this, the sceptically-disposed reader may look to the published writings on these subjects of Raja Rajendralala Mitra, Dr. Bháu Dáji, the late Pandit Bhagbánlál Indrají, Professor Rámkrishna Gopál Bhándárkar, and a host of others too numerous to be mentioned here, and he will find, I am sure, that, at least, some of the latest accessions to our recent knowledge of Indian Archæology are the results of researches carried on by that band of eminent Indian scholars whose names have been given above. Professor Alexander Pedler's sweeping remark does not even apply with equal force to the natives of India, so far as their researches in the domain of the Abstract Sciences, such as Mathematics and Astronomy, are concerned. The Hindu mind is as much characterised by subtlety of thought and acuteness of intellect to grapple successfully with the most intricate problems of Mathematics and Astronomy as to unravel the mysteries of Hegelian philosophy. Should proof be needed of this, too, the sceptic may be again asked to look at the published dissertations on Mathematical subjects of Dr. Asutosh Mukhopadhyá, F. R. A. S., F. R. S. E. It is only in the domains of the Natural and Physical Sciences, that is, of those sciences which require for their successful study a highly

trained and highly cultured faculty of observation, a dexterity in the performance of experiments and a facility in applying the process of inductive generalisation to the determination of scientific truths and laws, on the part of the students, that Indians have been found especially wanting. Although the ignorant may think lightly of the ascertainment of a scientific fact, as being easy, yet the true votary of science looks at it in the light of a serious task. In Chemistry and Physics, each single fact has to be established by repeated observation and experiment. It is said that Dr. Andrews had to repeat one experiment several hundreds of times before he could find out the change of bulk in oxygen gas when converted into ozone by the electric spark. Similarly the peculiarity of the Natural History group of sciences is the creation of a system of classification to embrace an enormous number of objects. The very learning of the art of classification is in itself another form of education. Besides, Zoology, Botany and Geology also require the aid and exercise of the faculties of observation, experiment and induction. In fact, it has been said that the Sciences of Classification, namely Zoology, Botany and Geology, are but modifications of the Experimental and Inductive Sciences of Chemistry and Physics accommodated to the emergency of putting into orderly array the vast multitude of animals, plants and minerals. But I have said on more than one occasion that the natives of this country are altogether wanting in the faculties of observation, experiment and induction, which are essentially necessary for the study of the Physical and Natural Sciences.

The faculty of observation is like a pair of spectacles through which we look up, as it were, to Nature and to Nature's God. The habit of observation is the only means by which we can attain to mastery over the Natural Sciences, and the more it is developed and matured, the more it reveals to us things novel and curious in nature which formerly escaped our notice. There are the gay-winged insects, the "birds with painted wings," the wayside flowers with the colours of the rainbow blended in them, and many other objects of beauty in Indian landscapes which delight the heart of a European, but possess no charm for the Indian. No native, for instance, would pause to watch the habits of a particular bird or insect, or to examine the structure of a particular flower. They are not imbued with that feeling of pleasure which "the meanest flower that blows" excites in the minds of many Europeans. No native of India feels any interest in these objects of nature, except so far as they are subservient to his daily uses. But, in justice to my countrymen, it must be said that they are not to blame for this deficiency



in the faculty of observation, for something must be lacking in their mental constitution to make them so apathetic as regards the prosecution of original research in the Physical and the Natural Sciences. The faculty of observation is awakened in Europeans at a very early age. From their very boyhood, they begin to make collections of butterflies, moths, beetles, shells, and the like; and European children will go to the most inaccessible places to collect rare flowers and ferns. The true cause of this love of European children for natural history pursuits is that they imbibe it from their parents. The majority of Europeans in India, as elsewhere, are in some sort field-naturalists—lovers of plants and flowers and birds and butterflies. Thus it is that the faculty of observation is often awakened in them in their earliest years; and the home often becomes to them what the lecture-room occasionally becomes to natives when pretty well advanced in life. But the contrary is the case with my fellow-countrymen. As few of them take any interest in the Physical and the Natural Sciences, their children also imbibe their indifference to these pursuits. The poorest of Europeans keep a few flowering and ornamental shrubs in their houses, but even the richest of natives seldom have a single vestige of greenery in their homes. Consequently, native children find nothing in the shape of Natural History specimens in their homes to kindle in them that love of animals and plants which is at the very root of the study of Natural Science.

It has been said by an eminent authority on the science of education that, for the better teaching of the Experimental and Inductive Sciences of Physics and Chemistry, and the Sciences of Classification, namely, Zoology, Botany and Geology, the teacher should not only familiarise the young minds under his charge with the actual experiments and the specimens, but the pupils should also manipulate the same with their own hands, for the actual specimens, when seen and handled, and the experiments when manipulated, make a more lasting impression on the mind than any verbal description can—an impression which is not only greater in intensity, but more faithful to the fact. As the most desirable form of knowledge is the full and precise conception of actualities—of objects as they are, the necessity of experiment and the actual manipulation of the specimens become all the more important, for the interest excited by the concrete detail is very great, it being the easiest of all forms of scientific interest. In order to make a successful experiment, the experimenter has to take many delicate precautions and have recourse to many fine manipulations—some of

which involve matters of knowledge that are not, perhaps, conveyed to the minds of the learners, while they retain a very lasting hold of the memory of the experimenter himself. It is fully evident, therefore, that no one can hope to be an adept, an expert, or an authority in any one of the experimental sciences of Physics or Chemistry unless he sets himself to study it practically.

The Indian student's deficiency in the knowledge of the Natural Sciences is also partly due to the humane instincts of the Hindu mind, which forbid the infliction of pain in any shape on the lower animals. But, for successfully studying the Natural Sciences or, at least, that department of them which deals with living animals, it is absolutely necessary that the structure of animal organisms should be examined in all its details—a process which cannot be carried out unless the animals are first deprived of their lives. It is a well-known fact that, for the purpose of examining at leisure the functions of certain organs of the animal frame, or of testing the action of certain drugs on the brain, scientific men often stupefy dogs, rabbits and other animals by administering chloroform or some other anæsthetic to them, and rip open the required parts so as to expose to the view the internal structures thereof. It is to protest against the doings of these men, who “mangle the living dog drenched with the hellish oorali,” that the leading Hindu and Marwari gentlemen of Calcutta have, within the last two years, formed themselves into a powerful organisation under the name of the Anti-Vivisection Society of India. This newly-formed Society is but another manifestation of that humane instinct of the Hindu mind which is averse to inflicting pain in any shape whatever on the lower animals. It is partly these humane sentiments towards the lower animals that have prevented my countrymen from betaking themselves to their study. It is precisely these sentiments which made Sir William Jones averse to the study of Zoology. In his Tenth Anniversary Discourse, delivered by him in 1793, before the Asiatic Society of Bengal and embodied in the fourth volume of the *Asiatic Researches*, he gave utterance to these sentiments, with his characteristic eloquence, in the following touching and noble words: “Could the figure, instincts, and qualities be ascertained either on the plan of Buffon, or on that of Linnæus, without giving pain to the object of their examination, few studies would afford us more solid instruction, or more exquisite delight; but I never could learn by what right, nor conceive with what feeling, a naturalist can occasion the misery of an innocent bird, and leave its young, perhaps, to perish in a cold nest, because it has gay plumage, and has never been delineated; or deprive even a butterfly of its natural enjoyment,



because it has the misfortune to be rare or beautiful. The study of the practical side of Zoology involves much dirty work, for the internal organs of animals cannot be advantageously studied unless they are dissected so as to expose to the view the minutest structures of the various organs." It was this aversion to the process of cutting open and disembowelling animals for the purpose of studying their internal structure that led the great Orientalist to the pursuit of botany, which he calls "the loveliest and most copious division in the Science of Nature."

Having shown that this disheartening disinclination of the natives of India to cultivate the Experimental Sciences of Chemistry and Physics, and the Sciences of Classification, such as those of Zoology, Botany and Geology, proceeds largely from an inherent lack of the faculties of observation and experiment in the mental constitution of the Indian youths, I must now go on to examine how far Professor Pedler's statement, to the effect that "it is sad that this is the case even after high education has been established for so long, and has become widespread throughout India, and even after numerous facilities have been given, in various directions for the encouragement of original work," is true; that is to say, what numerous facilities have been given and in what directions, for the prosecution of original scientific research by native Indian youths.

The first and foremost facility that has been offered for the fostering of higher thought and work in the department of Science is the endowment known as the Elliott Prize for Scientific Research. During the year 1892, Sir Charles Elliott made the handsome donation of Rs. 5,000, which was invested in the Government 4 per cent. promissory notes, and yields an annual income of Rs. 200 for the purpose of creating an endowment for the encouragement of original research in the Physical and the Natural Sciences in Bengal. Ultimately the scheme took the shape of a prize which should be awarded annually, either in cash or partly in the form of a gold medal and partly in cash, for any original essay embodying the results of original research or investigation in any branch of Physical, Chemical, Mathematical or Natural Science. The Trustees appointed to administer the endowment were the President of the Asiatic Society of Bengal, the Vice-Chancellor of the Calcutta University, and the Director of Public Instruction of Bengal. The Council of the Bengal Asiatic Society have not only authorised the President to act as a Trustee of the Elliott Prize Fund for original scientific research, but have also agreed to the prize being awarded at the Annual General Meeting of the Society held in the month of February every year.

It appears that the following five competitors entered the lists to compete for the Elliott Prize for Scientific Research for the year 1893, and sent in the undermentioned five essays :—

- (1). Babu Asutosh Mukhopádhya, M. A., F. R. S. E.  
(3 essays) :—

(a).—On an application of differential equations to the theory of plane cubics.

(b).—Researches on the number of normals common to two surfaces, two curves, or a curve and a surface.

(c).—On the application of Gauss' theory of curvature to the evaluation of double integrals.

- (2). Babu Jnán Saran Chakravarti, Student, Presidency College :—

A chapter on the general equation of the second degree.

- (3). Babu Brajendranáth Seal, M. A., Principal, Berhampore College :—

New methods of determining some fundamental definite integrals, being a chapter in the integral calculus ; with an introductory section containing new formulæ for the summation of series, together with their applications.

- (4). "S. L. S.," Student, Presidency College :—

A deduction of the properties of prime and composite numbers from those of recurring decimals, and their equivalents in other scales of notation.

- (5). Babu Chandra Kanta Basu, Sub-Overseer, Madaripur :—

Mathematical investigations, and their practical applications, if possible, for the determination of a sound-generating spot where sonorous vibrations commence and afterwards produce the sensation of sound, from the data of observed differences of time in which the same report is heard from several places fixed in position.

The Trustees, after consulting experts, as provided in the scheme, adjudged the "Elliott Prize for Scientific Research" for the year 1893 to Babu Chandra Kanta Basu, Sub-Overseer, Madaripur, author of the paper numbered 5 in the above list.

The subject-matter of the Elliott Prize Essay for 1893 may be summarised as follows :—A few years ago, the Bengal Asiatic Society appointed a committee of scientific gentlemen to enquire into the origin of those sounds, like the booming of distant cannons, which can often be heard during the rainy season at places situated in the districts of Lower



Bengal, bordering immediately upon the Bay of Bengal, otherwise familiarly known to Europeans as the *Barisal Guns*. But, as all the information that had been hitherto gathered on this subject was vague and insufficient, the Committee could not arrive at a definite conclusion. It was, however, evident that, if the spot from which the sounds emanate could be accurately ascertained, the solution of the problem would be rendered much easier. The Elliott Prizeman for 1893 sought to solve this problem about the origin of the Barisal Guns on the following mathematical principle:—Assuming that the velocity of sound is known and constant, if the same sound is heard at two different places, the difference between the distances of those places from the spot where the sound originated can be calculated, being equal to the velocity of sound multiplied by the difference between the times observed. From the well-known property of the hyperbola, that the difference between the focal distances of any point of the curve is constant, it follows that the sound must come from some point of a hyperbola having the two observing stations as its foci, or, if allowance be made for the curvature of the earth's surface, from some point of a hyperboloid of revolution. When there are several observing stations, each pair of stations gives a definite locus for the origin of the sound, and if the point common to all these loci can be determined, this point must be the one required. The prizeman has, by calculations which are given at considerable length in the prize-essay, determined this common point, and has, also, given the modifications of the calculation caused by the variations of the velocity of sound and other causes.

The "Elliott Prize for Scientific Research" for 1894 was not awarded to anybody. The subject selected for the prize that year was Natural History. There was but one competitor in the field who sent in an essay on that subject. But the Trustees of the Prize-fund, having consulted experts, as provided in the scheme, came to the conclusion that the essay sent in was not of sufficient merit to justify the award of the prize to its author.

The "Elliott Prize" for 1895 has been awarded to Babu Jyotibhusan Bhaduri, M. A. The subject for the prize-essay last year was Chemistry, and the Trustees of the fund had received only two essays from the following competitors for the prize:—

1. On the Transformation of Hypochlorites into Chlorates, by Babu Jyotibhusan Bhaduri, M. A.
2. On the wastage of gold in the course of preparing jewellery in Bengal, especially in "colouring," with explanations

of interesting indigenous chemical processes, and researches, into the subject of recovering the gold that is lost, by Jnán Saran Chakravarti, B. A.

After consulting experts, the Trustees awarded the prize for the year 1895 to the author of the first-named dissertation. They also considered the essay by Babu Jnán Saran to be worthy of commendation. The gist of the subject treated of in the prize-essay is as follows :—

In the beginning of the paper the various methods of estimating chlorates and hypochlorites are described. It has been found possible to estimate both directly in a mixture containing them, by distillation in moderately dilute solution with pure phosphoric acid and then treating the residue with fuming hydrochloric acid. Hypochlorites cannot be estimated in acid solutions (with KI and HCL) in presence of chlorates.

By passing the washed chlorine gas through a solution of sodic hydrate, the action of chlorine on the hydrate is determined. On account of considerable change in the volume brought about by the absorption, the quantity of sodium is estimated subsequently. The total amount of chlorine is ascertained by reduction, with zinc copper couple, and the hypochlorite by Penot's, or distillation processes. It has been found, as the result of numerous experiments, that the amount of chlorate which is formed in solution up to 7 per cent. of concentration, and containing free alkali, is insignificant. Above 10 per cent. solution, however, the secondary reaction—transformation—becomes more distinct, and when the concentration exceeds 20 per cent., time becomes an important factor. The presence of free alkali retards the change.

For the purpose of observing the transformation, the solution of known potency is kept in stoppered bottles, or sealed tubes, and then exposed to rays of different degrees of refrangibility, or kept in a totally dark place. After the required time, an analysis is made of the contents thereof, and the amount of oxygen is also determined therewith. It has been found, as the result of the analysis, that a solution of sodium hypochlorite decomposes slowly even when kept in an absolutely dark place, and that the rate of decomposition increases with the increase in the refrangibility of the rays. Yellow rays are found to be far more active than the red in bringing about the decomposition. The decomposition is one into chlorate and free oxygen. If there be very little free alkali, or none at all, chlorine gas is at the same time liberated.

When the decomposition takes place at about 100° C., strong sealed glass tubes are made use of. Comparing the percentage decomposition of a number of solutions wherein the relative amounts of free alkali, chloride, chlorate and hypochlorite



are the *same*, the following peculiarities are found. The rate of decomposition diminishes with dilution up to a certain point when it is a minimum. Further diminution in concentration, instead of diminishing, increases the rate of decomposition. This peculiarity is found not only in the case of similar solutions heated for different periods of time, but in all solutions which are examined, the proportion of hypochlorite to free alkali being approximately found to be as 2 : 5, 2 : 2 and 2 : 1. When the percentage decompositions are represented by curves whose ordinates express percentage decompositions and abscissa concentrations, greatest depressions (minimum decompositions) lie very nearly in the same vertical line. The exact strength of the solution which decomposes least has not yet been accurately determined, but it is found to range between 1.5 and 1.7 per cent. of concentration. The influence of the other constituents may be left out of consideration, as all the solutions, containing widely different amounts of chlorate, hypochlorite and free alkali point to the same conclusion. In all cases, however, oxygen and chlorate are produced at one and the same time. At the end of the first hour, the quantity of oxygen that is set free varies from  $\frac{1}{4}$  to  $\frac{1}{2}$  of the oxygen fixed in the chlorate. As the time of heating is increased, the amount of free oxygen is also increased; but in no case is this quantity greater than the oxygen of the chlorate, although the potency of the solution is found to vary from 3 to 8.9 per cent., and the period of heating from one to six hours and a half. As the potency of the solution diminishes, oxygen is set free in larger quantity. For the same quantity of chlorate formed, the amount of oxygen decreases with the rapidity with which the solutions are heated.

The second facility that has been offered to Indian students for the prosecution of biological and physiological researches is the opening of the Joy Gobind Law Laboratory in the Calcutta Zoological Gardens, for which the Calcutta public must for ever be indebted to the munificent liberality of Babu Joy Gobind Law, a wealthy citizen of Calcutta. In a letter, dated the 8th August 1892, addressed to the Hon'ble H. H. Risley, C I.E., a Member of the Committee of Management of the Calcutta Zoological Gardens, the Babu offered Rs. 15,000 to found a laboratory for the purpose of conducting experiments with, and testing, the various alleged remedies for snake-bite which are from time to time brought to notice, and for other physiological and biological investigations. This munificent offer having been thankfully accepted by the Committee, a communication was addressed to the Government of Bengal, which suitably acknowledged the gift in the official Gazette. The laboratory is now practically completed and supplied with

a set of apparatus for biological investigations. During the year 1893-94, Dr. Cunningham carried on in this laboratory a series of experiments on the efficacy of various alleged remedies for cases of snake-bite. Another series of experiments, undertaken at the instance of the "Hemp Drugs Commission," was also initiated during the course of that year and carried on in this laboratory. Experiments on the efficacy of the various alleged antidotes to snake-poisoning were also continued in it during the year 1894-95. Dr. D. D. Cunningham, who carried on these experiments, submitted to the Government of Bengal a separate report embodying the results of these investigations, which has been published in the *Calcutta Gazette*. But the facilities afforded by this laboratory have not as yet been availed of by any Indian student for the prosecution of research in Biology or Physiology.

In 1893, a Professorship of Geology was established in connection with the Presidency College, Calcutta, for teaching that science in all its branches. Since the endowment of this chair, some students have passed the B. A. Examination with honours in Geology from that College.

These are the *numerous* facilities, which can be counted on the fingers of one hand, and which have been referred to by Professor Pedler in the course of his address as being available to Indian students for the prosecution of original research in the Physical and the Natural Sciences; and, considering the extent of the facilities offered, I must say that the original work in Physical and Natural Sciences which is being done by native gentlemen, both within the sphere of the Calcutta University and also outside its domain, is very encouraging indeed, and betokens the dawning of a brighter intellectual future for Bengal. I will proceed to review in the following pages the original work which is being done by native gentlemen in the field of scientific investigation. In the domain of Physics, the researches of Mr. J. C. Bose, M. A. (Cantab.) D. Sc. (Lond.), Professor of that science in the Presidency College, Calcutta, are already attracting the attention of the scientific world in Europe. The results of Dr. Bose's investigations on Electro-Magnetic Radiation and Light, which were carried out in 1895-96 at the Physical Laboratory of the Presidency College, Calcutta, have been published in the following six instalments :—

1. On Polarisation of Electric Rays by Double Refracting Crystals. (*Journal of the Asiatic Society of Bengal, Part II, for 1895.*)
2. On the Determination of the Indices of Refraction of various Substances for the Electric Ray. (*Proceedings of the Royal Society of London, Vol. 59, p. 160.*)



3. On a New Electro-Polariscope. (*Electrician*, 27th December, 1895).
4. On Double Refraction of the Electric Ray by a Strained Dielectric. (*Electrician*, 27th December 1895).
5. On a Simple and Accurate Method of Determining the Index of Refraction.\*
6. On the Determination of the Wave Length of Electric Radiation by Diffraction Grating.†

In May 1895, this gentleman read before the Asiatic Society of Bengal a paper "On Polarisation of Electric Ray by Double Refracting Crystals," which embodies some of the results of the investigations undertaken by him to find out natural substances which would polarise the electric ray. In this paper the author gives an account of the polarising action of certain crystals on the transmitted ray. The apparatus used in these experiments consisted of an electric radiator emitting electro-magnetic radiation of short wave length, a polariser, an analyser and a receiver responding to incident radiation. The polariser and analyser are adjusted in a crossed position, and the crystal to be examined is then interposed. In certain positions the crystal brightens the dark field. Crystals belonging to the Tetragonal, Hexagonal, Rhombic, Monoclinic and Triclinic systems were found to polarise the electric ray. The effect produced by the following crystals was especially marked:—Beryl, Apatite, Brucite, Barite, Microcline. The results of these researches have shown "that crystals which do not belong to the Regular System, polarise the electric ray just in the same way as they do a ray of ordinary light. Theoretically, all crystals, with the exception of those belonging to the Regular System, ought to polarise light. But this could not hitherto be verified in the case of opaque crystals. There is now no such difficulty with the electric ray, for all crystals are transparent to it. As a matter of fact, all these experiments, with one exception, were performed with specimens opaque to light, and it was an interesting phenomenon to observe the restoration of the extinguished electric radiation, itself invisible, by the interposition of what appears to the eye to be a perfectly opaque block of crystal, between the crossed gratings." A detailed account of the apparatus used and the results obtained have been published in the Bengal Asiatic Society's *Journal* for last year.

At a meeting of the Royal Society of London, held on the

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\* Published for the first time in Dr. Bose's *An Account of Experimental Research in the Physical Laboratory, Presidency College, Calcutta*, in 1895. Calcutta: W. Newman & Co. 1896.

† Published for the first time in the form of a pamphlet.

12th December last, a paper on the "Determination of the Indices of Refraction of various Substances for the Electric Ray" by this gentleman was read. Mr. J. C. Bose's researches in the domain of Physics are so highly valued in England that he recently had the honour of receiving from Lord Rayleigh, the discoverer of the new element Argon, a letter telling him that his paper "On the Indices of Electric Refraction" had been communicated to the Royal Society of London. Further, these researches are considered so important that the Royal Society has expressed a desire to make a grant in furtherance of them from the "Government Fund for the Encouragement of Original Researches," annually voted to the Society by the British Parliament. Mr. J. C. Bose, whose love for the study of nature and enthusiasm for researches into physical science are well-known, has devoted all his spare hours to the experimental study of Hertz's discoveries ever since 1890, and has succeeded, with the scanty apparatus at his disposal, in proving experimentally the identity between luminous and electric waves, the chief difference between the two being in the size or length of the vibration.

In this paper, Dr. Bose says: "The indices of refraction of transparent substances have been determined by the usual optical methods. There is still a large number of substances, like the various rocks, wood, brick, coal-tar and others, whose indices cannot be determined in this way owing to their opacity to light. These substances are, however, transparent to electric radiation, and the present investigation was undertaken to find a direct method of determining their indices with a sufficient amount of accuracy. Even in the case of optically transparent substances, the indices are only known for the narrow range of luminous radiation. For greater wave lengths, the index is inferred from Cauchy's formula. Professor Langley has, however, shown that this formula fails to give trustworthy results when applied to the dark radiations in the infra-red portion of the spectrum. It does not, therefore, seem at all likely that the above formula will give accurate results when applied to electric radiation.

"For the determination of the index for the electric ray, the prism method is not very suitable. In the well-known experiment of Hertz with the pitch prism, the deviation of the refracted rays extended from  $11^{\circ}$  to  $34^{\circ}$ . The approximate value of  $n=1.69$  obtained from this experiment, is probably higher than the true value by about fifteen per cent. For the accurate measurement of the deviation, the effect produced by radiation on the Receiver should be made to undergo an abrupt variation. When the radiation passes from a dense to a light medium, then at a certain critical angle of incidence



the radiation is totally reflected. From this critical angle, the index of refraction is easily determined. The great advantage of this method lies in the fact that the transition from refraction to total reflection is very sudden. I have determined the  $n$  of various substances for the electric ray by the method of total reflection. It will be seen from the results of my experiments that this method is capable of giving very good results."

Anent the new Electro-Polariscope invented by him, Professor Bose observes: "In a paper read before the Asiatic Society of Bengal 'On Polarisation of Electric Rays,' in May last, I gave an account of some experiments which showed that crystals which do not belong to the Regular System, produce double refraction of the electric ray, and that the refracted beams are plane polarized. Among the numerous crystals examined, I found some exhibiting the so-called depolarising action in a very marked degree, even when the thickness of the crystal was less than the wave length of the electric radiation. I found, for example, Nematolite, a fibrous variety of Brucite, exhibiting this action with pieces which were comparatively thin. Different varieties of Satin Spar, Serpentine, Tourmaline and a few others, were found to be very effective depolarisers. From the various experiments made, I was led to suppose that these crystals transmit the ordinary and the extraordinary rays with unequal intensities. It would thus seem possible to quench one of the two rays by absorption, ordinary radiation after transmission through these crystals thus becoming plane polarised. It should, however, be mentioned here that crystals as a rule are far more transparent to electric radiation than to ordinary light, and as a consequence greater thickness of crystals would be required for the complete absorption of one of the two rays. The apparatus with which these experiments were carried out, consist of a radiator emitting short electric waves, a cylindrical lens of sulphur for rendering the electric beam parallel, a pair of Analyser and Polariser and a Receiver for detecting the electric radiation."

Dr. Bose's paper "On Double Refraction of the Electric Ray by a Strained Dielectric" embodies the results of the researches which were undertaken by him to find out whether a dielectric becomes double-refracting to the electric ray when the substance is subjected to a molecular stress by unequal expansion due to heat, or by mechanical compression. In carrying on this experiment he used the new Electro-Polariscope mentioned above, the Analyser and the Polariser having been crossed and the strained substance introduced between them.

With regard to Dr. Bose's invention of the new Electro-Polariscope, the *Electrician* of the 27th December last wrote as follows :—" We publish this week an interesting set of papers by Professor J. C. Bose dealing with the subject of Electro-Magnetic Radiation. It was suggested some years ago in these columns *apropos* of the *Eider*, which, it will be remembered, ran ashore in a dense fog almost at the foot of the St. Catherine's light, that it would be a useful and a remunerative job for some practically-minded man to devise a practicable system of electro-magnetic 'light' houses, the receivers on boardship being some electrical equivalent of the human eye. The evolution of a suitable generating apparatus would, we thought, present little difficulty; that of a suitable receiver, on the other hand, seemed likely to give considerable trouble. In this connection we would draw attention to the substantial and workmanlike form of 'Coherer,' devised by Professor Bose, and described by him at the end of his paper 'On a New Electro-Polariscope.' The sensibility and range of this type of 'Coherer' would appear to leave little to be desired, and it is certainly more likely to withstand, with equanimity, the thousand and one shocks that the flesh is heir to at sea, than any of the forms hitherto brought out."

In his paper "On a Simple and Accurate Method of Determining the Index of Refraction," now published for the first time, Professor Bose described a cheaper, and at the same time simple, apparatus for determining the Index of Refraction, as follows :—

"The apparatus usually employed for the determination of the index of refraction is very elaborate and costly. Numerous adjustments have to be made, and a long time spent to secure accurate results. The following method for the determination of the optical index is a modification of the one which has for some time been employed by me in the determination of the index of electric refraction. The apparatus required is very simple, and I made a rough model of it at a trifling cost, and gave it to my pupils for trial. I was surprised to find how, even in their inexperienced hands, it gave results which would compare favorably with the various determinations of the indices hitherto made. The other advantages of this method are the quickness with which a determination can be made, and its adaptability to lecture demonstrations.

"The method depends on the determination of the critical angle at which total reflection takes place. The principle of total reflection has also been employed by M. M. Terquem and Trannin, but the method now being described is somewhat different, being much simpler, as no Collimator and observing



Telescope are required. It has the additional advantage of being applicable to solids ; and, by a process of repetition, the value of the critical angle is obtained with very great accuracy. A beam of light is refracted from the given substance into air, and the angle of incidence gradually increased till total reflection just takes place. From the critical angle  $i$  thus determined, the index is found from the formula 
$$u = \frac{1}{\sin i}.$$

"The apparatus required is, as has been said before, very simple, and may be constructed at a cost of only a few shillings. The essential things necessary are,—(1) a hollow glass cylinder, which may be a beaker, for liquids (or a stoppered phial for volatile substances), or two semi-cylinders of the given solid ; (2) a circular wooden table graduated into degrees, and capable of rotation round a vertical axis. The table has at the centre a raised circular platform carrying an index. The platform can revolve round the common vertical axis independently of the table. When the platform is clamped down, the circle and the platform revolve together round a common axis. The apparatus may be used for the following investigations :—

- (1.) Determination of the indices of solids and liquids.
- (2.) Variation of the index with the strength of different solutions.
- (3.) Variation of the index with temperature.
- (4.) Determination of the indices for the different rays, and of the dispersive power.

The thesis which Professor Bose recently presented to the University of London for the degree of D. Sc. embodies the results of his researches into the methods of determining the Wave-Length of Electric Radiation by Diffraction-Grating. On account of the great importance of these interesting researches, the University of London has conferred on him the rare distinction of the degree of Doctor of Science—the highest honor at the disposal of that learned body. The Board of Examiners of that University have accepted the thesis sent in to them by Mr. Bose for the ensuing D. Sc. examination, and have made a special case in his favour by conferring on him this high degree without requiring him to present himself personally at the examination. The gist of Dr. J. C. Bose's researches in this direction may be best told in his own words as follows :—

"While engaged in the determination of the Indices of Refraction of various Substances for the Electric Ray (*vide* Proceedings of the Royal Society of London, Vol. 59, p. 160), it seemed to me that the results obtained would be rendered more definite if the wave-length of the radiation could at

the same time be specified. Assuming the relation between the dielectric constant  $K$ . and the index  $u$  as indicated by Maxwell to hold good in all cases, it would follow that the index could be deduced from the dielectric constant, and *vice versa*. The values of  $K$ . found for the same substance by different observers are, however, found not to agree very well with each other. This may, to a certain extent, be due to the different rates of alternation of the field to which the dielectrics were subjected. It has been found in general that the value of  $K$ . is higher for slower rates of alternation, and the deduced value of  $u$  would therefore be higher for slow oscillations, the larger waves being thus the more refrangible. The order of refrangibilities would in such a case appear to be somewhat analogous to that in an anomalously dispersive medium like iodine vapour. With exceedingly quick ethereal vibrations, which give rise to light, there is an inversion of the above state of things, *i. e.*, the shorter waves are generally found to be the more refrangible. It would thus appear that there is a neutral vibration region at which this inversion takes place, and where a transparent medium produces no dispersion.

"It would be interesting to be able to determine the indices of refraction corresponding to different wave lengths chosen as widely apart as possible and plot a curve of refrangibilities. A curve could thus be obtained for rock salt, which is very transparent to luminous and obscure radiations, and fairly so to electric radiation. Carbon bisulphide, which is very transparent to all but the ultra-violet radiation, would also be a good substance for experiment.

"For the construction of a curve of refrangibility for electric rays having different vibration frequencies, the indices could be determined by the method of total reflection referred to above. The determination of the corresponding wave lengths, however, offers great difficulties. Hertz used the interference method for this purpose. The positions of nodes and loops of stationary undulation produced by perpendicular reflection were determined by means of tuned circular resonators.

"Sarasin and De la Rive subsequently repeated these experiments with different sized vibrators and resonators. They found that the apparent wave length depended solely on the size of the resonators. The wave length found was approximately equal to eight times the diameter of the circular resonator. From these experiments it was supposed that the radiator emitted a continuous spectrum consisting of waves of different lengths, and that the different receivers simply resonated to vibrations with which they happened to



be in tune. If this supposition be true, the emitted radiation should, by the action of a prism, or better still, a diffraction grating, spread out in the form of a more or less continuous spectrum. If, on the contrary, the radiation is monochromatic, the spectrum should be linear. The experiments made by me may throw some light on this question.

"Professor J. J. Thompson, referring to the above case, is of opinion that the hypothesis of a continuous spectrum is highly improbable. It is more likely that owing to the oscillation being of a dead-beat character, the resonator is set in vibration by the impact of incident electric waves. Each resonator vibrating at its particular free period, measures its own wave length.

"There is, however, one difficulty in reconciling the theoretical value with that actually obtained. According to theory, the wave length should be equal to twice the circumference, or  $2\pi$  times the diameter of the circular resonator. The value actually obtained by Messrs. Sarasin and De la Rive is, as has been said before, eight times the diameter of the circle.

"Rubens, using a bolometer and Lecher's modification of the slide bridge, determined the nodes and loops in a secondary circuit in which stationary electric waves were produced. A curve obtained by representing the bolometer deflections as ordinates and the distances of the bridge from one end as abscissae, shows the harmonic character of the electric disturbance in the wire. It was found that the wave length obtained by this method did not depend on the period of the primary vibrator; the wave length measured was merely that of the free vibration started *in the secondary circuit* by the primary disturbance.

"Hertz's method is, therefore, the only one for the measurement of electric waves in air, and the result obtained by this method is vitiated by the influence of the periodicity of the resonator. It was therefore thought desirable to obtain the wave length of electric radiation in free space, by a method unaffected by any peculiarity of the receiver.

"I have succeeded in determining the wave length of electric radiation by the use of curved gratings, and the results obtained seem to be possessed of a considerable degree of accuracy. Rowland's method of using the curved grating for obtaining diffraction light spectra was also found well suited for the production of pure spectra of electric radiation."

The mean value of the different wave-lengths obtained by Dr. J. C. Bose from these investigations has been found to be 1.846 C. M. These researches have further proved that the diffracted spectrum is not continuous, but linear, and that the radiation is monochromatic and gives rise to a bright line spec-

trum. It has further been found that the method adopted by Professor Bose of determining the wave-length of electric radiation by a diffraction-grating gives concordant results, and that these determinations are not in any way affected by the periodicity of the receiving circuit—the receiver being simply used as a radioscope.

Dr. J. C. Bose's researches have been very favourably received by savants in Europe, and have earned for him a well-deserved reputation. The University of Cambridge was the first to recognise his merits, for as soon as his paper on the Electro-Magnetic Radiation was published in the pages of the *Electrician* of the 27th December last, it signified its high appreciation of the great value of his investigations by conferring on him the honorary degree of Master of Arts, an honour which was never before accorded by any English University to any Indian graduate. Nor were the scientists slow in according to Professor Bose his due meed of praise, for as soon as his invention of the new Electro-Polariscope was announced to the world, letters of congratulation from such eminent savants as Lord Kelvin, Professor Sadowsky and others poured in to him from different parts of the globe. Recently the Royal Society of London has, on the recommendation of the Parliamentary Grant Committee, placed at his disposal a grant of money for the systematic determination of the Index of Refraction of all Dielectrics for the Electric Ray and other researches.

In the domain of chemical research, Dr. P. C. Râya, D. Sc. (Edin.), Assistant Professor of Chemistry, Presidency College, Calcutta, is doing excellent work. Having obtained the Gilchrist Scholarship awarded for the years 1883-87, Mr. Râya went, in 1882, to Edinburg, and commenced his studies in the University of that town. Having laid a sound foundation of general scientific knowledge, he devoted himself especially to the study of Chemistry. He worked in the Chemical Laboratories during the summer and winter sessions, from May 1883 till March 1888, and latterly acted as Laboratory Assistant to Dr. Gibson and Dr. Alexander Crum-Brown, M. D., D. Sc. F. R. S., Professor of Chemistry in the Edinburgh University. Mr. Râya also attended the Practical Class held by Professor Tait, and subsequently worked with much success in the Physical Laboratory also. In 1885, Mr. Râya graduated as B. Sc. in the Physical Experimental Sciences, and took the degree of D. Sc. in 1887. He was awarded the Hope Prize Scholarship in Chemistry, and held it during the years 1887-88. Dr. Râya is also a Vice-President of the Chemical Society affiliated to the University of Edinburgh. His acquirements as a chemist are of a very high order, and have been



highly testified to by eminent authorities in Europe. Professor Crum-Brown spoke of him as follows:—

"As much of Dr. Ráya's work was done under my own observation, I can speak with confidence as to his ability and knowledge. He has an extensive and sound acquaintance with all branches of theoretic chemistry, and is a careful and accurate analyst. He has shown that he has the capacity for original investigation—his thesis on '*The Conjugated Sulphates of the Copper Magnesium Group*' for the [degree of D. Sc. being a piece of excellent analytical work, well arranged, and thoroughly and conscientiously carried out. Dr. W. Dittmar, LL. D., F. R. S. E., L and G., Professor of Chemistry in the Andersonian University of Glasgow, bore the following testimony to Dr. Ráya's acquirements:—

"My not unfrequent visits to the Edinburgh University Laboratory have repeatedly given me the pleasure of meeting Dr. P. C. Ráya and conversing with him on chemical subjects. I have, besides, on two occasions, heard him speak at length at meetings of the Edinburgh University Chemical Society, and I have studied his excellent Paper on Crystal Compounds of the Double Sulphates of the Magnesia series with the closest attention." Dr. Ráya's acquirements in both the theoretical and practical branches of Physics were also highly spoken of by such an eminent authority as Mr. P. G. Tait, M. A., Secretary to the Royal Society of Edinburgh and Professor of Natural Philosophy in the University of that town. Since returning to India, Dr. Ráya has also published a very useful and beautifully illustrated "*Primer of Zoology*" in Bengali, which is calculated to supply a long-felt desideratum in the scientific literature of that language.

Dr. Ráya's original contributions to Chemical Science may be enumerated as follows:—

1. On the Conjugated Sulphates of the Copper Magnesium Group. (*Proceedings of the Royal Society of Edinburgh* for 1888).
2. On the Chemical Examination of certain Indian Foodstuffs, Part I. Fats and Oils. (*Journal of the Asiatic Society of Bengal Part II.*, for 1894.)
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At a meeting of the Asiatic Society of Bengal, held in February 1894, Dr. Ráya read a paper "On the Chemical Examination of certain Indian Foodstuffs. Part I.—Fats and Oils." The author was led to undertake these investigations owing to the gradual spread of a popular belief that, in some of the most important towns of India, many of the common articles of diet, especially *ghee*, butter, milk, mustard oil, &c., are adulterated wholesale; and the present paper embodies the results of his researches in this direction, which were carried on by the author at intervals during the last four years. The following excellent abstract of this paper, which was published in the Bengal Asiatic Society's *Proceedings* for February 1894, is quoted here *in extenso*, as it will give the reader an insight into the complicated nature of the researches carried on by the author: "As butter largely enters into the dietary of the people of Europe and America, abundant work has been done by chemists on its analysis. It is, however, well-known that the composition of the milk and of the butter made from it is, within certain limits, dependent on the breed, climate, method of feeding the cows, period of lactation and so on; the standard for genuine butter, as generally accepted in England, especially at Somerset House, cannot, therefore, always be accepted as a safe guide in this country. The analysis of the fixed oil of mustard, and the various other oils with which it is generally sophisticated, also presents considerable difficulties. Not much work has been done in this field. The history of the substances which have been subjected to analysis is seldom given, and the experimental methods are not generally described in sufficient detail to enable the results to be compared. While the information available is meagre, on the one hand, the results published from time to time are in themselves, in some cases, contradictory. It was thus found to be necessary to work out, in the first instance, a series of *constants*, for such Indian foodstuffs as mustard oil, butter, *ghee*, &c., which might be of some help in deciding cases of falsification. Particular care was taken in procuring genuine samples of substances. The oils were in many cases expressed under direct supervision from seeds carefully selected, so that the purity of the products was unquestionable. A sample of pure mustard oil was also obtained through the courtesy of the Superintendent, Alipore Jail, and another of cocoanut oil from the Officer in charge of Kopra works, Viper Island, Port Blair with a certificate from him guaranteeing its purity and stating it to be a standard sample."

"The preliminary examination of fats and oils is much helped by the application of certain physical tests, *e. g.*, melting point, specific gravity, index of refraction, &c. The work



is at present confined solely to the chemical methods. The determination of the physical constants has been reserved for a future occasion. The fats and oils are simply combinations of certain acids, the so-called fatty acids, *e. g.*, butyric, stearic, oleic, palmitic, &c., with glycerine; hence they have been named the *glycerides*. By estimating the amount of either or both of these constituents of fatty substances, valuable information is often obtained as to their nature. Now, if a fat be treated with an alkali, the fatty acids contained in the former, combines with the latter, resulting in the formation of an alkaline salt, commonly called a *soap*, and the separation of glycerine. It so happens, however, that the molecular weights of some of these fatty acids vary within wide limits. Thus, butyric acid, occurring in butter-fat, has a molecular weight equivalent to 88, while erucic acid, a component of mustard oil, has a molecular weight of 338. A molecule of caustic potash weighing 56 will exactly neutralise 88 parts by weight of butyric acid, or 338 parts by weight of erucic acid. Hence a given weight of butter-fat will require a far larger portion of caustic potash to convert it into soap, to *saponify* it, as it is called, than the same weight of mustard oil. Koettstorfer has made use of this principle. It has, in fact, been found by actual experiments, that while 100 grammes of butter-fat require very nearly 20 grammes of caustic potash for saponification, the same weight of mustard oil requires only 17 grammes of the alkali. The amount of glycerine also will vary in the same manner. Again butyric, caproic, and other *volatile* acids, present in cocoanut oil, butter-fat, &c., may be easily separated from the non-volatile acids by distillation, and their amount ascertained by their potash-neutralising power. Upon this principle is based the well-known Reichert's test. The amount of iodine absorbed by different fats and oils also lies within wide limits. The iodine absorption has been employed with remarkable success by Baron Hübl in deciding cases of adulteration."

The following processes have been made use of:—

1. Direct trituration of the fats and oils by alcoholic potash—Koettstorfer's test.
2. Estimation of the amount of glycerine.
3. Iodine absorption—Test of Hübl.
4. Estimation of the *volatile* fatty acids—Reichert's test,

For convenience of reference, the results obtained are presented below in a tabulated form :—

Nature of fat or oil.	Saponification equivalent.	Glycerine, per cent.	Iodine absorption, per cent.
Mustard ...	172·176	8·5	97·0
Niger-seed ...	190·0	10·8	120
Cocoanut-Oil ...	258·0	.....	6·9
Ghee ...	218-222	.. ..	33·5 39·4
Mowa-fat ...	199·3	.. ..	61·8
Mutton-tallow ...	195·5-206	10·5	.....
Sesamé ...	189·9	.....	104·5
Lard ...	195·4	.. ..	50·0
Earth-nut ...	195·0	.....	98·0

It would thus appear that as the saponification equivalents of niger-seed oil, mowa-fat, mutton-tallow, sesamé oil, lard and earth-nut oil are very close to one another, their admixtures in considerable proportions cannot be detected by Koettstorfer's test. Even the saponification equivalent of *ghee* is not far removed from that of lard or tallow. The saponification equivalents of mustard oil and cocoanut oil are, however, highly characteristic. The iodine numbers, on the other hand, afford us valuable hints as to the nature of adulteration, the most remarkable features being the exceedingly low numbers for cocoanut oil, and for *ghee*." The results of the application of Reichert's test will form the subject of another paper.

At a meeting of the Asiatic Society of Bengal, held on Wednesday, the 4th December 1895, Dr. P. C. Râya read a paper *On Mercurous Nitrite* which has been published in the *Journal of the Asiatic Society of Bengal*.

Although Lefort, Gerhardt, Marignac, and other chemists have been for a long time engaged in the study of the action of nitric acid on mercury under varying circumstances, yet they could not discover or prepare mercurous nitrite, the existence of which was indicated by the laws of chemical analogy. Mercury has been known to yield almost all the different classes of compounds known to chemists, such as sulphides, oxides, sulphates, nitrates, &c., but the nitrite series of the element were found wanting. There is scarcely any information worth the name to be found about mercurous nitrite in Fremy's *Encyclopédie Chimique*. Even Roscoe and Schorlemmer, in their well-known treatise, do not so much as mention this compound, nor is there any reference to it to be found in the latest edition of Watt's *Dictionary of Chemistry*. It was reserved for Dr. P. C. Râya to discover this "missing link"



in the series of the compounds of mercury which had hitherto baffled all the efforts of the European chemists either to discover or prepare. Dr. Ráya describes as follows the way in which he was led to the discovery of mercurous nitrite :—

“ Having recently had occasion to prepare mercurous nitrate in quantity by the action of dilute nitric acid in the cold on mercury, I was rather struck by the appearance of a yellow crystalline deposit. At first sight it was taken to be a basic salt, but the formation of such a salt in a strongly acid solution was contrary to ordinary experience. A preliminary test proved it, however, to be at once a mercurous salt as well as a *nitrite*. The interesting compound promised thus amply to repay an investigation.

*Method of preparation.*—Yellow nitric acid, sp. gr. 1.410 is diluted with water in the proportion of 1 to 3 in a flask or beaker. A large excess of mercury is at once poured into the liquid. The heat of solution of the acid in water helps to start the reaction. A gentle effervescence of gases at once takes place, and in the course of about an hour yellow needles, resembling prismatic sulphur, begin to appear on the surface of mercury. After a few hours the liquid, together with the mercury, is carefully decanted off, and the salt shaken out of the vessel over porous tiles, to remove the adhering mother-liquor.

For purposes of analysis, &c., it is preferable to collect the first day's, or at most the second day's, crops only, partly because minute globules of mercury get entangled among the mass of the crystalline deposit, which it is tedious to get rid of, and partly because the composition of the salt varies on standing in the liquid. Thus it is found that if the salt, instead of being removed, is allowed to remain in contact with the mercury and the mother-liquor, it gradually disappears, and in its place transparent, perfectly colourless crystals are formed, which grow in size with time. These latter will be described under the name of “Marignac's salt,” which is a basic mercurous nitrate.

*Qualitative tests.*—The new compound among others answers to the following tests :—

1. Dilute sulphuric acid slowly evolves nitrous fumes : more readily on heating.
2. On warming with a large excess of water, globules of mercury separate out. In the cold the decomposition is only partial.

The *perfectly clear* mother-liquor, decanted off the mercury, gives the following reactions :—

- (a). Boiled with an excess of pure caustic soda solution, it yields a black dense precipitate, the filtrate from which, after acidification with dilute sulphuric acid,

rapidly decolourizes potassium permanganate solution, and instantly sets free iodine from potassium iodide.

- (b). Sodium chloride throws down a copious white precipitate; after removal of the calomel, the filtrate is now divided into several portions; to one is added caustic soda, and a yellow precipitate is the result, another portion, treated with potassium iodide, gives an orange precipitate; whilst a third portion, on addition of chloric and phosphorous acids, yields a further quantity of mercurous chloride.

It is thus evident that in the clear solution we have both a *mercurous* and *mercuric* salt as well as a *nitrite*. Urea does not give the faintest opalescence to the liquid, showing the absence of mercuric *nitrate*."

Much interest attaches to the discovery of this compound, not only on account of its having hitherto baffled all the efforts of European chemists to prepare it, but also because it throws a good deal of light on the much-vexed question of the exact nature of the action of nitric acid on the metals. The place of mercury in Mendelejeff's Periodic System would also naturally justify the expectation that it would yield the analogue of Silver Nitrite, and the present compound is a realisation of it. As a substitute for Silver Nitrite in the preparation of the Nitro-compounds, the importance of this new compound is simply invaluable. There is a very important class of organic compounds called Nitro-bodies (first investigated by Professor Victor Meyer of Heidelberg), of which the only practical mode of preparation has hitherto been by the action of Iodides of Alcohol radicals on Silver Nitrite. As Silver Nitrite is a very costly material, chemists have since long been trying, without success, to find out a cheaper substitute for it. An eminent chemist, Dr. Lasar Cohn, who has made this subject his life-long study, says in one of his latest publications that silver and iodine cannot be replaced by cheaper material, and that a trial with Lead Nitrite was unsuccessful. But what makes Dr. Ráya's discovery of Mercurous Nitrite so highly important is that henceforth Nitro-compounds can be prepared quite cheaply and without much labour by substituting the compound for Silver Nitrite. Dr. Ráya's discovery has been highly spoken of by chemists in Europe. Among others, Dr. Victor Meyer, the eminent Professor of Chemistry in the University of Heidelberg, has been so much impressed with the importance of this discovery that he has recommended Dr. Ráya's paper on the new compound which has been published in the *Journal of the Asiatic Society of Bengal* to be literally translated into German, and printed in the *Zeitschrift für Anorganische Chemie*.



With reference to this newly-discovered compound of mercury, *Nature* of the 28th May, 1896, writes as follows: "The *Journal of the Asiatic Society of Bengal* can scarcely be said to have a place in our Chemical Libraries; the current number, however, contains a paper by Dr. P. C. Râya, of the Presidency College, Calcutta on Mercurous Nitrite, which is worthy of note."

Dr. Râya is at present engaged in the investigation of numerous other compounds of mercury, which are of a highly complex nature.

At a meeting of the same Society, held on Wednesday, the 1st April 1896, Babu Jyoti Bhusan Bhaduri, M. A., the Elliott Prizeman for 1895, read a paper entitled *Notes on the Decomposition of Mercurous Chloride and Estimation of Free Chlorine.* It has, however, not yet been published in the Society's *Journal*.

In Physical Chemistry some original researches were made by an Assamese gentleman—Mr. R. D. Phookan, Ph. D. The results of these investigations were published by him in a German scientific periodical—Mr. Phookan graduated Ph. D. in the University of Heidelberg. The testimonials which he received from Dr. Victor Meyer, the accomplished Professor of Chemistry in the University of Heidelberg, spoke highly of his attainments as a chemist. Dr. Phookan has also made some important researches in a very complicated branch of Physical Chemistry, which goes by the name of Stereo-Chemistry. Of Dr. Phookan's original contributions to science, that "*On the Rate of Evaporation of Bodies in Atmospheres of Different Densities*" deserves more than passing notice. The results of his experiments in this direction showed "that, under the same conditions of heat and pressure, a substance volatilises more quickly in an atmosphere of gas of lesser density than in one of greater."\* Dr. Phookan came out to India in the beginning of the year 1895, but, alas! he was not destined to live long and promote the cause of original scientific research in this country. It is with deep regret that we have learnt that Dr. R. D. Phookan died about two months ago in Oudh. Possessed of high scientific attainments, he had a bright future before him, and, had he been spared, would have done much to enrich science by original contributions; but, by his untimely death, a career of great promise has been cut off in the very prime of manhood.

Then I come to the domain of what may be called the Natural History group of sciences, such as Zoology, Botany, Geology (including its collateral science, Palæontology) and

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\* *Vide* the "Report of the British Association for the Advancement of Science" for 1893, page 72.

Mineralogy (including Metallurgy). Mr. P. N. Bose, B. Sc. (London), F. G. S., Officiating Superintendent of the Geological Survey of India, has earned for himself a widespread reputation by his researches in Palæontology, Geology and Mineralogy. The results of his researches in these departments of science are embodied in the various papers which he has from time to time contributed to the literatures of these branches of knowledge. These papers, of which the majority have been published in the *Memoirs* and the *Records* of the Geological Survey of India, may be enumerated as follows :—

#### I. PALÆONTOLOGY.

- (1). Undescribed Fossil Carnivora from the Sivalic Hills in the collection of the British Museum (with one plate). (From the Quarterly Journal of the Geological Society of London, February 1880.)
- (2.) Undescribed Fossil Carnivora from the Sivalic Hills. (From the "Records of the Geological Survey of India," Vol. XIV, Part 3).
- (3). Notes on the History and Comparative Anatomy of the Extinct Carnivora. (From the Geological Magazine, Vol. VII, December 11th, 1880.)

#### II. GEOLOGY.

- (1). Geology of the Lower Narbada Valley (with a plate and three maps). From the "Memoirs of the Geological Survey of India," Vol. XXI, Part 1).
- (2). On the Geology and Mineral Resources of Sikkim (with one map). (From the "Records of the Geological Survey of India," Vol. XXIV, Part 4).
- (3). Notes on the Geology of a part of the Tenasserim Valley with special Reference to the Tenddu-Kamapying Coal-field (with two maps). (From the "Records of the Geological Survey of India," Vol. XXVI, Part 4, 1893).

#### III. MINERALOGY AND METALLURGY.

1. Note on Lignite near Raipur, Central Provinces. (From the "Records of the Geological Survey of India," Vol. XVII, Part 3).
2. The Iron Industry in the western portion of the Raipur district, (From the "Records of the Geological Survey of India," Vol. XX, Part 4).
3. Notes on the Igneous Rocks of the Districts of Raipur and Balaghat, Central Provinces (with a plate.) (From the "Records of the Geological Survey of India," Vol. XXI, Part 2, 1888).
4. The Manganese-Iron and Manganese-ores of Jabalpur (with two maps). (From the "Records of the Geological Survey of India," Vol. XXI, Part 3, 1888).
5. The Manganiferous Iron and Manganese Ores of Jabalpur (with one plate). (From the "Records of the Geological Survey of India," Vol. XXII, Part 4, 1889).
6. Notes on some Mica-Traps from Barakar and Raniganj. (From the "Records of the Geological Survey of India," Vol. XXI, Part 4, 1888).
7. The Darjeeling Coal between the Lisu and the Ramthi Rivers explored during Season 1889-90. (with one map). From the



- "Records of the Geological Survey of India," Vol. XXIII, Part 4, 1890).
8. Extracts from the Journal of a Trip to the Glaciers of the Kabru, Pandim, &c. (From the "Records of the Geological Survey of India," Vol. XXIV, Part 1, 1891).
  9. Further Note on the Darjeeling Coal Exploration. (From the "Records of the Geological Survey of India," Vol. XXIV, Part 4, 1891).
  10. Note on Granite in the Districts of Tavoy and Mergui (with one plate). From the "Records of the Geological Survey of India," Vol. XXVI, Part 3, 1893).

In his paper on the "Undescribed Fossil Carnivora from the Sivalic Hills in the collection of the British Museum," Mr. Bose has figured and described those fossil species of Carnivora which had been left undescribed owing to the untimely death of Dr. Falconer. Most of these, however, had been figured by Mr. Ford for the "*Fauna Antiqua Sivalensis*," but were never published. This particular group of the fossil mammalia from the Sivalic Hills had not formed the subject of so much close study as the Sivalic Ungulates had done. This latter group of extinct Mammals had been ably described by Dr. Falconer, and, recently, Messrs. Rüttimeyer and Lydekker have given supplementary descriptions of the extinct Ungulates from the Sivalic Hills. But the case with the extinct Carnivora was different. So long ago as 1836, Falconer and Cautley described two of the larger forms of Carnivora under the names of *Felis cristata* and *Ursus sivalensis*. The latter was subsequently raised to the rank of a genus, called by Falconer, *Hyaenarctos*, evidently in opposition to De Blainville, who, under the designation of *Sivalarctos*, placed it at the head of his new sub-order Subursidae. Afterwards Dr. Falconer described another new and very interesting species of Carnivora under the name of *Euhydriodon Sivalensis*, in the pages of the Palæontological Memoirs. Besides the three species ably and minutely described by Falconer, Messrs. Baker and Durand described the remains of several other extinct carnivorous forms in the *Journal* of the Bengal Asiatic Society. And recently, Mr. Lydekker had described four more new species of the Sivalic Carnivora in the pages of the Records of the Geological Survey of India. To these have been added the following six new species of fossil carnivorous mammals by Mr. Bose, who has so ably and accurately described them in the paper of which the title has been mentioned above:—

1. *Viverra Bakerii*, nov. sp. Bose.
2. *Canis curvipalatus*, nov. sp. Bose.
3. \_\_\_\_\_ sp. ?
4. *Hyaena felina*, nov. sp. Bose.
5. *Felis* sp. ?
6. *Machærodus palæindicus*, nov. sp. Bose.

He has also therein given supplementary descriptions of the *Hyaena Sivalensis* and *Machærodus Sivalensis* which had been described before by Falconer and Cautley.

Besides describing the new forms of the Sivâlic Carnivora, Mr. Bose discussed, in the foregoing paper, the question as to the age of the Sivalic Fauna, and put forward arguments in support of the older view, of the said fauna having appertained to the Miocene Age, instead of to the Pliocene Age as urged by the Geological Survey of India. Mr. Lydekker of the Survey, who had been for some time engaged in describing the Sivâlic fossils in the Geological Museum, Calcutta, was thereupon led to criticise Mr. Bose's paper in the Records of the Geological Survey. To these criticisms of Mr. Lydekker, Mr. Bose gave a brief reply, which was published in Vol. XIV of the Records of the Geological Survey of India, Part 3.

In his Notes on the "History and Comparative Anatomy of the Extinct Carnivora," Mr. Bose deals with the dentition, brain and osteology of the fossil Carnivores of the Eocene Period. As the teeth of all the Eocene Carnivores, as compared with those of the typical Carnivora, are apparently more or less anomalous, Mr. Bose tries to establish in this paper that the peculiarities in the dentition of the Eocene Carnivores can be most satisfactorily explained on the hypothesis of its gradual modification from that of some primitive Mammal, the nearest approach to which is the insectivorous *Gymnura*, having its habitat in the Malayan Archipelago. The results of Mr. Bose's researches into the dentition of the Eocene Carnivora may be summarized as follows:—

1. "That starting from the *Arctocyon*, the most primitive Carnivore known to us, we have two divergent series, one comprising *Palaeonictis*, *Amphicyon* and *Cynodon*; and the other, *Proviverra*, *Hyenodon*, *Pterodon*, *Ambloctonus*, *Oxyaena*, and probably also *Synoplotherium*, *Mesonyx*, *Patriofelis* and *Sinopa*."

2. "That the first of these two series approach in the form of their teeth the typical Carnivora, of which they were the ancestors."

3. "That the second series formed an exceptional group of Carnivores, of which *Hyenodon* was the last and most highly organized form."

4. "That the peculiarities in the dentition of the Eocene Carnivores can be most consistently explained by observing the modifications in the dentition of the *Insectivora*."

As regards the brain of the Eocene Carnivores, Mr. Bose has come to the conclusion that the brain cavity of the Eocene Carnivores was comparatively small, and that the structure of the brain in the great majority of them, as made out from casts



either natural or artificial, presented some singular points of departure from the typical Carnivora. He also infers from the form and number of the caudal vertebræ, discovered in some of the forms, that all the genera of Eocene Carnivora had a long and large tail.

During the three working seasons of the years 1880-83, Mr. Bose was occupied in thoroughly investigating the geological formations of the Lower Narbadá Valley between Nimáwar and Káwant. The area of Mr. Bose's investigations was all but virgin soil, untrodden by the footsteps of a geologist. The results of his researches have been embodied in his splendid monograph on this subject published in the first part of Vol. XXI of the "Memoirs of the Geological Survey of India." In this memoir, Mr. Bose has described the undermentioned geological formations of the Lower Narbadá Valley :—

Formations.	
Approximate European Equivalents.	(1). Deccan trap (igneous, mostly sub-aerial) with inter-trappean fresh-water limestone.
Upper Cretaceous.	(2). Lameta (lacustrine). (3). Coralline-limestone. (4). Deola and Chirakhan Marl (5). Nodular-limestone
Lower Cretaceous (Neocomian).	(6). Nimâr sandstone (estuarine and fresh water ?) with oyster band at the top.
Jurassic.	(7). Mahadeva (Upper Gondwana) sandstone (fresh-water). (8). Vindhyan sandstone (lacustrine?) (9). Bijawars, or transition series (marine). (10). Metamorphics (marine).

Mr. Bose studied the fossiliferous and the igneous rocks, especially the former, in greater detail than the older azoic formations.

In his paper on the "Geology and Mineral Researches of Sikkim," Mr. Bose has described the Gneissic Group of Rock and the Dalings, besides the ordinary minerals to be found in that country. With reference to the Gneissic Group, Mr. Bose says: "The rocks belonging to this group are the oldest, and constitute the main body of the Himálayas. From near Kurseong, south of Darjeeling, to the northern frontier of Sikkim, it is uninterruptedly traced over a distance of some 75 miles in a straight line; whereas all the later rocks—the submetamorphic slate group, the Damudas, and the Tertiaries—together cover an area in the outer Himálayas nowhere more than 6 miles in width. Two forms of the gneiss are met with—(a). In southern Sikkim, approximately south of the parallel of Jongi and Boktolá (about Lat.  $27^{\circ} 25'$ ), the gneiss is highly micaceous and frequently passes into mica schists; (b). In Northern Sikkim, as north and south-west of Jongi, about Lachung, &c., the gneiss is not quite so micaceous. The

Dalings, which are a group of submetamorphic rocks—so called after a place named Daling in the Darjeeling district, and of which the phyllites form the predominant rock, occur in Sikkim somewhat in the form of a dome-shaped anticlinal.

In his "Geology of a part of the Tenasserim Valley," Mr. Bose has described the lithology, disturbance and age of the Moulmein and the Tendau Groups of rocks, as also the alluvial deposits of the same region. As regards the age of the Moulmein group, Mr. Bose says: "The only rock in the group which has yielded fossils is the limestone. It being highly crystalline, the fossils cannot be extracted without great difficulty. After some search in the neighbourhood of Therabwin, I succeeded in getting together a small collection. It consists of the following well-marked carboniferous forms which have been determined by Dr. Noetling, the Palæontologist of the Survey:—

*Schwagerina blanfordi*, sp. nov.

*Lonsaleia sdalinaria*, Waag. and Wentz. sp. indet.

*Lithostrotion*, sp. nov.

*Araepora*, cf. *ramosa*, Waag. and Wentz.

*Polypora*, cf. *biarmica*, Keyserl.

*Productus*, cf. *Sumatrensis*, F. Roemer.

*Athyris* sp.

*Spirifer* sp.

*Bellerophon* sp.

*Pleurotomaria*, aff. *durga*, Waag.

*Murchisonia* sp.

Dr. Oldham, who called the group under consideration after the town of Moulmein, met with a similar assemblage of fossils in the limestone at the well-known caves near that place. There can be no doubt of the carboniferous age of the Moulmein group, on the supposition, of course, that the limestone from which the above fossils have been obtained is an integral portion of it. I must say that I have scarcely any doubt on this point, though the evidence is not quite so conclusive as might be desirable."

With reference to the age of the Tendau Group, Mr. Bose says: "The Tendau beds rest unconformably on the denuded edges of the Moulmein strata. At the boundary, on the western side of the river, the latter invariably dip westward, but on the eastern side they usually dip eastward. Besides, the dips of the younger group are not so high as those of the older. The Tendau group is, therefore, evidently younger than the Moulmein. Some plant fossils (mostly Dicotyledenous) and some fish-remains have been obtained from the shales belonging to the former group. Their exact determination, however, is a matter of the greatest difficulty. All that can be said is, that the age in all probability is tertiary."



Lignite, which forms the subject of his first mineralogical note, was discovered by Mr. Bose in the bed of the Karun river, 3 miles south-west of Raipur, the capital of the Chhattisghar division of the Central Provinces, within the boundary of the village of Bhátágáon. The lignite occurs below the sand, as logs in a blackish, rather stiff, alluvial clay, impregnated with peaty matter. The logs are black, and show woody structure perfectly well. Their length and thickness are variable; those I obtained had a maximum diameter of six inches. The specimens of lignite obtained by Mr. Bose all belonged to Dicotyledonous land plants, of which the jungles enclosing the plain of Chhattisghar are still almost exclusively made up. In the peaty matter associated with the lignite mentioned before, were some leaves fairly enough preserved for identification. Unfortunately those brought away by Mr. Bose had been hopelessly crushed. When more specimens were obtained, exact specific determination would be an easy task. Two specimens of lignite brought by Mr. Bose had been analysed by Mr Hiralál of the Geological Survey, and the results obtained are given below :—

			No. 1.	No. 2.
Moisture	...	...	21'76	11'64
Volatile matter (exclusive of moisture)	...	...	44'84	52'36
Fixed Carbon	...	...	28'30	30'00
Ash	...	...	5'10	6'00
			<hr/> 100'00	<hr/> 100'00

The results indicate a fuel certainly poorer than coal. But the proportion of fixed carbon is higher than in ordinary peat, and the heating power consequently greater. This lignite, therefore, is of great economic importance, and, if found in sufficient quantity, would furnish a cheap substitute for wood to the residents of the country round about Raipur.

In his "Notes on the Igneous Rocks of the districts of Raipur and Balaghat, Central Provinces," Mr. Bose has discussed at length the mode of occurrence, age and petrography of the felsites, and of the basaltic rocks, as also of the tuffs and volcanic agglomerates which occur in the jungle-clad border country forming the water-shed between the districts of Raipur and Balaghat, and situated north of Dongargarh, and west of Lohara, Gandai, and Khairagarh. They are, as a rule, unbedded; and they alternate with ridges of Chilpi shales and sand-stones which are probably of Transition age. Their general parallelism to the strike of the Chilpis is notable.

In his paper on "*The Manganese-iron and Manganese-ores of Jabalpur*," published in the Records of the Geological Survey of India, Vol. XXI, Part 3, Mr. Bose gave a sketch of

the economic results of the Manganese exploration in the Jabalpur district, and described manganiferous hematite in which manganese is usually present as nests and thread-like veins of *psilomelane*, besides being disseminated in the matrix, and *pyrolusite*, the distribution of which is generally coextensive with that of the Gosalpur quartzites. With respect to the ore-bearing capabilities of this area, Mr. Bose says : " I found that the *pyrolusite* occurred in and among quartzites, which were subsequently found to invariably accompany the Lora group, forming probably its base, and which, for the sake of convenience, I have designated as Gosalpur quartzites. I found, also that the Lora group formed a distinct synclinal just west of Gosalpur, the manganiferous and other Lora strata which crop out here reappearing in the Chakrandha hill, a mile and a half west of Gosalpur, but with the dip reversed. With these clues I traced the *psilomelane* and *pyrolusite* over a rather wide area, included partly in Sihora and partly in Jabalpur Tahsil. But though spread over such a large area, the quantity of *pyrolusite* does not appear to be so great as might be expected. I must observe, however, that none of the localities was searched so minutely as Gosalpur ; and that the present report is to be taken rather as indicating the directions in which *pyrolusite* or *psilomelane* is to be looked for, than as giving an exact, or even an approximately exact, estimate of the ore-bearing capabilities of the entire area."

In his second paper on the preceding subject, published in Part 4 of Vol. XXII of the Records of the Geological Survey of India, Mr. Bose gives, in the first place, a geological sketch of the ground in which the manganese iron and manganese ores occur, and then a summary of the observations made by him on their origin.

In his " Notes on some Mica-traps from Barakar and Raniganj," Mr. Bose has described the petrography of three specimens, all more or less decomposed, of those highly interesting rocks which were collected by Mr. Bose during a short excursion with the Director of the Geological Survey to Barakar and Raniganj towards the end of August 1887.

In his paper " On the exploration of Darjeeling between Lisu and Ramthi rivers," Mr. Bose describes the physical geography and the geology of the Darjeeling coal area, which he was led to explore under the following circumstances: "In 1873 Mr. F.R. Mallet of the Geological Survey was deputed to examine the coal and other mineral resources of the Darjeeling Hill Territory. Mr. Mallet's Survey brought to light a narrow band of coal-bearing rocks in the Sub-Himalayan range stretching from Pankabari to Dalingkot. In the "Memoirs of the Geological Survey," Vol. XI, Part I, Mr. Mallet fully discusses



the workability of the coal seams he came across. The decision arrived at by him, which is very forcibly expressed in a later paper in the "Records of the Geological Survey," is decidedly against the workability of the coal, so very decidedly, indeed, that, coming from one of the most careful observers the Survey has ever had, it was considered final. \* \* \* \* \* So the Darjeeling coal was given up as hopeless. On the data before him, Mr. Mallet could have come to no other conclusion than what he aimed at. But Mr. Mallet's survey was very general. He had time only to go up some of the principal streams and notice the outcrops of coal that presented themselves, as it were, to him. It is possible that some important ones lay hidden in the intervening areas between the principal streams. Indeed, when it is remembered how thick the jungle is where they occur, and how obscure the sections are as a rule, such a thing appears highly probable. It was this probability, and the immense economic importance of the Darjeeling coal, that led to my deputation to re-examine it last cold season (1889-90). I made a general examination of the area between the Jít and the Tistá, and a fairly detailed one of that between the Lisu and the Ramthi, where the coal seams gave the best promise of success. I must say, when I started work, I had but little hope of finding workable coal. The find, however, of thick seams of cakable coal in the Churanthi valley early in December appeared very promising, and it was considered desirable to ascertain their extent and thickness by excavations. The Government of Bengal was applied to for a grant of Rs. 2,000 for the purpose, which they sanctioned in March. The coal ground, being almost entirely in the Reserved Forest, is covered by very thick, nearly impenetrable, trackless jungle. The exuberant undergrowth of creepers, and the low, matted, dark scrub jungle, especially of cane, presented the most serious obstruction to vision and locomotion. The emanations from decomposing vegetation were at times almost intolerable. I had literally to cut down nearly every foot of my way; and clambering up the innumerable streamlets and watercourses was equally slow and tedious work. To add to these natural difficulties, the Revenue Survey map of the area, though on a sufficiently large scale (2 inches to the mile), is neither accurate nor detailed enough for close work. Many streams are not marked; those that are, it is difficult to say if they are all correctly laid down: several do not certainly appear to be so. Scarcely any landmark was available. One bridle-road passes through the explored area, along the watershed between the Lisu and the Churanthi. But it is not on the map; very likely it was not in existence when the survey was made. There are a few scattered hamlets north and west of the coal

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area ; but they are not on the map, as they must have sprung up since its construction. So a new map had to be made, which is presented with this report. It is, I believe, fairly correct, and is on a sufficiently large scale to admit of details."

The possibility of coal seams, similar to those of the Lisu-Ramthi area, being discovered in the Damuda area west of the Tístá, the proximity of this area to several existing lines of cart, and one line of railway, communication with the plains ; and the fact that a considerable balance was left from the grant made during the previous season by the Government of Bengal were the considerations which induced Mr. Bose to continue further, during the working season of 1890-91, his explorations for coal in the entire Damuda area between Pankhabárf and the Tístá. The results of these further researches are described in detail by Mr. Bose in his second paper on Darjeeling coal exploration published in Part I. of Vol. XXIV of the "Records of the Geological Survey of India." In this paper, he has supplemented Mr. Mallet's systematic treatment of the subject in the eleventh volume of the Geological Survey's Memoirs by describing in brief the geology of the area explored. But the economic results of these Mr. Bose's further researches in the Damuda area, though disappointing, are not altogether devoid of importance, considering that the question about the discovery of workable seams of coal in the area explored, which crops up from time to time, may now be safely said to be set at rest.

In his "Note on Granite in the districts of Tavoy and Mergui," Mr. Bose has described the petrography of that rock as found in those districts. Mr. Bose says that the occurrence of this rock in the districts of Tavoy and Mergui has an economic importance owing to the usual restriction of tin-ore in its vicinity.

Lastly, I have to say something about the labours in the field of Zoology of Babu Rám Bráhma Sányal, Superintendent of the Zoological Gardens, Calcutta. In the year 1892, the Zoological Society of London honoured him by electing him as one of its Corresponding Members, in recognition of his efforts to promote the advancement of zoological knowledge in India.

In the Resolution of the Government of Bengal on the Report of the Committee for the Management of the Zoological Gardens, Calcutta, for the year 1888-89, Sir Steuart Bayley, the then Lieutenant-Governor of Bengal suggested as follows :—  
"As the Zoological Gardens have now been in existence for 13 years (since 1875-76), it is presumable that many events have taken place among the large number of animals, birds, &c., exhibited from time to time, which would be of interest to the scientific world and to persons interested in zoology.



also that considerable experience must have been gained in the management of animals, birds, &c., in confinement, and their treatment in sickness, which would be of practical use to the managing bodies of other Zoological Gardens and to individuals who have private collections. Sir Steuart Bayley is strongly of opinion that it is incumbent on all persons who keep animals in captivity to avoid, as far as possible, anything like cruelty (such as want of space, or air, proper food or cleanliness) in their treatment, and he recognises that the Zoological Gardens' Managing Committee set an excellent example in this respect. He would venture to suggest that, from the records of the Committee and *the recollections of their able Superintendent*, it would be possible for them to produce a hand-book which might be of great use to the numerous nobles and other persons who, on a smaller scale, keep collections of animals or birds in captivity."

Thereupon a meeting of the Committee of Management was convened on the 2nd April 1890, for the purpose of considering the aforesaid suggestion; and, as the result of its deliberations, it recommended the appointment of a sub-committee for the purpose of giving effect to it. A sub-committee was accordingly formed; and, after mature consideration, it drew up a plan for writing the suggested work. It is on the lines adopted by the sub-committee that Babu Rám Brámha Sányál, the able Superintendent of the Gardens, prepared under the direction of Mr. C. E. Buckland, C.S., one of the members of the Committee, his well-known *Hand-book on the Management of Animals in Captivity in Lower Bengal*, which was published in 1892. For the purpose of writing this work, Mr. Sányál, as he informs us in the preface, had to prosecute a good deal of original research, in the shape of examining the collection of the vertebrata in the Indian Museum, Calcutta, for the purpose of identifying the little known forms. This work was very favourably noticed by both the European and the Indian press. *Nature*, the leading scientific newspaper of Great Britain and Ireland, reviewed it in the following flattering terms: "Considering the number of Zoological Gardens in Europe, and their long establishment, it is singular that it should have been left to the Superintendent of a Zoological Garden at Calcutta, and to a native of India withal, to produce the first practical hand-book on the management of animals in captivity. The author, who, we believe, is one of the very few natives of British India that have exhibited any taste for natural history, has been for some years Superintendent of the Zoological Gardens at Calcutta, an excellent institution mainly kept up by the Government of Bengal, but under the control of a committee of the subscribers. It is certainly a work

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of considerable merit. It is evident that the author has kept a regular journal, and has recorded his experiences very minutely. On the whole, we must allow that this volume is a remarkable production, considering the circumstances under which it has been prepared, and that its author deserves great credit for the pains bestowed on its composition, and for much valuable information contained in it." This work was also very favourably received by the Government of Bengal, which expressed a hope that "the Superintendent of the Gardens should be directed to continue his observations of scientific facts, and his notes on the habits of animals, which must continually come to his notice."

In 1894, the Honorary Committee for the Management of the Calcutta Zoological Gardens was requested by the Municipal Corporation of Bombay to depute some expert to the latter city for the purpose of advising that body in regard to the alterations and improvements to be effected in the management of the zoological collection in the Victoria Garden. The Committee accordingly deputed Mr. Rám Brámha Sányál, C. M. Z. S., the able Superintendent of the Calcutta Garden, to proceed to Bombay. This he did during the month of March 1894, and, after examining the Victoria Garden and considering in all their bearings the questions of the various improvements needed, drew up and published a valuable and interesting "*Memorandum on the proposed improvement of the Victoria Gardens with a view to the formation of a Zoological Garden.*" Mr. Sányál's advice was so much appreciated by those in charge of the collection at Bombay that they have since determined on sending Jehangir M. Doctor, a graduate of the Bombay Veterinary College, over to Calcutta in order to have the advantage of practically studying the management of animals as conducted at Alipur.

Mr. Rám Brámha Sányál's original observations in the domain of Zoology are also embodied in the following papers, which were read before the Zoological Society of London and published in its Proceedings:—

1. Note on a hybrid between the *Semnopithecus phayrei*, Blyth, and *S. cristatus*. (*Proceedings of the Zoological Society of London* for 1893, p. 615).
2. Notes on *Cynogale bennetti*, Gray. (*Proceedings of the Zoological Society of London* for 1894, pp. 296-7).
3. On the Moulting of the Greater Bird of Paradise, with brief notes upon its habits in captivity. (*Proceedings of the Zoological Society of London* for 1895, pp. 541-2).

In his first note, Mr. Sányál has described a hybrid monkey (and, at the same time, exhibited to the meeting a water-colour



drawing of the mother, and of the baby monkey just as it was when it was two weeks old) born in the Calcutta Zoological Gardens of a Phayre's and a Crested Semnote. He says: "I am not aware whether closely allied species of *Semnopithecus* have ever interbred anywhere. They are rather exclusive in their ideas in respect to matrimonial relationship. Anyhow, such an event has just happened in this garden. The Phayre's Leaf Monkey (*Semnopithecus phayrei*, Blyth) has given birth to a young one—a lovely little babe, of a delicate light orange color. As there has been no other male in the same cage except the *S. cristatus*, there is no doubt of the young one being a hybrid between these two species. These monkeys have been living together since 1880, and although they agreed very well, they were never observed to be over friendly. Even now the male does not appear to take any interest in the offspring."

The acquisition by the Calcutta Zoological Garden of a specimen of *Cynogale bennetti*, Gray, from Borneo, enabled Mr. Sányál to have a water-colour sketch made of this rare Bornean mammal while living in the Garden. Mr. Sányál forwarded this drawing, together with some notes about the external characteristics and habits of this animal in captivity, to England, where it was exhibited and the notes read at a meeting, held on the 20th of March 1894, of the Zoological Society of London. He says: "On referring to the literature of the species, I find that the animal has been figured by S. Müller (Zool. Ind. Archipel., Mamm. pl. XVII.) under the name *Potamophilus barbatus*, and by M. M. Eydoux and Souleyet (Voyage de la Bonite, Mamm. pl. VI.) But a comparison of the present sketch with the figures given by the abovenamed authors will at once show that their figures could not have been drawn from life, and that both are practically useless for the purpose of identification."

In his remarks on the moulting of the Greater Bird of Paradise (*Paradisea apoda*), recorded in the Proceedings of the Zoological Society for April 1887 (p. 392), Mr. Bartlett questions the accuracy of the statement of Dr. Guillemard, made upon the authority of the inhabitants of the Aru Islands, that the Greater Bird of Paradise "does not wear its adult plumage all the year, and that its beautiful plumes remain developed for not longer than two or three months." In his note on this subject, Mr. Sányál confirms to a certain extent the truth of Dr. Guillemard's statement, and says as follows:—"I have had opportunities of observing the habits of two adult males of the Greater Bird of Paradise for a sufficient length of time to justify me in stating that, although it is difficult to make the phenomena fit in with our previous notion of the law of moulting."

ing in birds, it is nevertheless the fact that my observations regarding the moulting of this bird, extending over a period of four years, go to show that there is some truth in Dr. Guillemard's statement.

In January 1891, the Zoological Garden, Calcutta, was fortunate in having presented to it a male *Paradisea apoda*, from the Aru Islands. It was then in perfect adult plumage. By the middle of February following, I noticed that the bird was every now and then pecking at the feathers of its lower back, which was much dishevelled. Suspecting something wrong, I consulted Mr. William Rutledge, an experienced dealer in live stock at Calcutta, who had owned the bird for about two years previous to its acquisition by the Garden. He assured me that there was nothing wrong, but that the bird was beginning to moult. It went on throwing off its feathers slowly at first, but rapidly as the period of moult advanced, so that by the middle of May, it had cast off all its beautiful side-plumes and tail-feathers, except the two central wire-like ones, which fell off later on. The short, close, velvety feathers of the head, neck, and throat were the last to fall off, by the end of July, and the first to re-appear a few days later. The bird did not, however, assume its perfect plumage until about the middle of October. With slight variations as to time, it has, every year since its arrival in 1891, been observed to remain more or less in undress, as it were, during the unusually prolonged period of moulting. During the current year it began throwing off its feathers early in February, and now (May 7th) not one of the long beautiful plumes is left. The two long wire-like central tail-feathers have not fallen, but are broken off at the middle.

In January 1892, another male bird of the same species, but said to have been from the southern part of New Guinea (and possibly, therefore, referable to *P. papuensis*), was acquired by purchase. It was slightly smaller and a little brighter in color than the Aru-Island bird. During the two years that it remained alive, its moulting habits were carefully observed and found to vary somewhat from the other bird. Briefly speaking, it did not begin throwing off its feathers until the summer was somewhat advanced, and took less time to complete its moult than the Aru-Island bird."

It will thus be seen from the review which has been made above that Indian Scientists have made some contributions, however humble, towards the advancement of scientific knowledge. The beginning which has been made is indeed very small, but it betokens a future of great promise when natural and physical sciences, instead of being the intellectual speciality of Western civilization, will become the favourite



pursuits of Indian youths. The work that has already been done in the field of scientific research by Indian scientists is all the more deserving of credit, considering that it has been done in the face of so many difficulties and drawbacks. It may be true that Indian youths may be encouraged to betake themselves in larger numbers to the prosecution of original research in the domains of the physical and the natural sciences by the offering of rewards similar to the Elliott Prize in connection with our Universities, Scientific Societies, Colleges and other bodies, and for the holding of which there should be the necessary condition that the holder will have to carry on original work in some branch of science and publish the results thereof in the shape of dissertations. But it is my firm conviction that, should more substantial rewards than mere prizes and fellowships be offered, in the shape of appointments in those departments which are maintained by the Government chiefly for carrying on scientific research, but which are unfortunately almost exclusively officered by Europeans, Indian youths will be encouraged to betake themselves in larger numbers to these scientific pursuits. It goes without saying that exclusive devotion to scientific study and the prosecution of original researches in the field of science offer no openings to Indian youths, whereas these pursuits hold out in Europe avenues to employment in the public service and facilities for the earning of a livelihood which do not exist here in India, especially for the Indians. There are liberal endowments in almost all the countries of Europe offering premia for the encouragement and promotion of the higher work and thought in the domain of the physical and the natural sciences, whereby persons who have devoted themselves exclusively to the study of a particular branch of science are amply remunerated and, thereby, enabled to eke out their living comfortably. It will thus be seen that a specialist in science can carry on scientific investigations in Europe without fear of either starving himself or his family, but such is not the case in India, especially with the children of the soil. The people of India are, generally speaking, poor, and have to earn their daily livelihood in competition with a people the wealthiest in the world, whom Destiny has also made the arbiters of their fortunes. Under these circumstances, if an Indian youth devotes himself to the study of science only, to the exclusion of the other bread-and-butter-winning branches of learning, it is ten to one that he will have to starve for want of remuneration, nay, for want of the wherewithal to satisfy the cravings of his inner man, considering that there is no avenue open to him for employment in those departments of the public service which are maintained by the Government

exclusively for the prosecution of scientific investigations, and which are, therefore, carefully kept as a close preserve for Europeans and Eurasians. It will thus be seen that the general poverty of the Indians is also to a great extent responsible for their disinclination for all higher work and thought in the domains of the physical and natural sciences.

It is, no doubt, true that within the last decade or so the Government of this country has done much towards affording facilities for the imparting of scientific education to Indian youths. It has endowed a chair of geology in connection with the professorial staff of the Presidency College, Calcutta, and funds have been provided by it for developing the physical and the chemical laboratories that exist in connection with that institution. What has already been done may be taken as an indication of a sincere desire on the part of the Government to do more in the near future for fostering scientific education in this country and for placing it on a sound and systematic basis. But, in spite of what has been done, much more still remains to be done to bring scientific education, as it exists in this country, on a par with the lines on which it is imparted in Europe. For instance the only institution where Zoology and Botany, which are two of the principal branches of Natural Science, are regularly taught in the Bengal Presidency, is the Medical College of Calcutta. But even there, too, the teaching of these sciences is limited to just so much as is required for the professional purposes of the medical students, and is not accompanied by any laboratory work worth the name. Should the benign Government which sways the destinies of the teeming millions of India, see its way to endow chairs for teaching Natural Science in all its branches in connection with some of the leading educational institutions of this Presidency, and throw open the subordinate curatorships in the Museums and the Botanical Gardens, and the sub-assistantships in the Geological Survey, not only in Bengal but throughout India, and afford other facilities for the study of science, and hold out other premia for encouraging Indian youths to betake themselves in larger numbers to these pursuits, the Indians will, ere long, like the modern Japanese, take a leading place in the scientific world.

SARAT CHANDRA MITRA.



ART. VIII.—INDIAN UNIVERSITIES—ACTUAL  
AND IDEAL—II.

THE practical conclusions which it was hoped might shape themselves more or less definitely from a former paper under this heading (*Calcutta Review*, April 1895) were briefly these :—

1. University education in India has, relatively to present conditions, been allowed to grow too rankly. It has spread widely with little regard for efficiency. It has too great breadth and too little depth. Quality has been sacrificed to quantity.

2. To this lack of a sufficiently high standard is largely due the disappointing character of the results of English education, and possibly also the tone of disparagement, and even hostility, in which Indian Universities are sometimes spoken of.

3. It is an urgent necessity to unite the efforts of all concerned upon remedying existing shortcomings ; that is to say, it is expedient, for the present, to check rather than encourage further expansion of College education, and to devote our whole energies to improving that which exists. We now need an era of concentration.

Incidentally, also, I intended to suggest that the best education is necessarily costly, and must everywhere be, for some of those who enjoy it, a matter of pure benefaction. Englishmen, at all events, should not be surprised to find this the case in India, since liberal education is still more expensively endowed in Great Britain, though the mode of endowment is different. Severe criticism on the amount of public money spent on higher education in India is, therefore, to be deprecated.

My present purpose is to enforce more directly the first three of the above propositions, by passing in review certain points in regard to the Indian University as it is which seem specially open to criticism. Moreover, by way of set-off to possible errors in the opposite direction in what went before, I promise henceforward to be severely practical and to touch only upon matters in respect of which change in the present or near future is plainly possible. With the same practical aim, I shall confine my criticism to the University of Calcutta. It is justifiable to do so, on the ground that there is a strong family likeness among Indian Universities, and, though there are some not unimportant differences in detail, the pattern on which they are organised is, broadly speaking, the same. I shall notice some points of difference as occasion arises.

One more word of explanation is called for at the outset, I

shall speak of College and University as if they formed one coherent whole. This is not strictly true ; but they are closely connected enough to justify this mode of treatment, which is, indeed, necessary. How far it is inaccurate, I shall point out later on, noticing at the same time certain peculiarities in the mode of connexion between the two.

Prevalent criticism of the Indian University, regarded as a complete scheme of education, is reducible, I think, to two main counts :—(1) the education is one-sided, for it attempts to be intellectual only ; (2) even on that one side the education given is superficial and unreal. The latter, as the simpler and more technical matter, will be conveniently taken first.

The gravest indictment of our system from the purely academic standpoint I conceive to be (*v. Calcutta Review*, April 1894) that the mere difficulties due to an imperfect knowledge of English make it impossible for the average student to derive any real profit from the courses of study prescribed to him. A certain percentage pass examinations, it is true, but too many of these even, it is to be feared, more by painful industry and sheer effort of memory than through sound understanding and firm and cheerful grasp of their work. I have already committed myself to the opinion that the real key of the situation is to be found in the High English schools, and until the standard of these schools can be effectively raised, there is little to be hoped from other expedients. I must here content myself with repeating this conviction emphatically. If our College education is to be made of real value, we must first considerably raise the standard of the schools from which our students are drawn. But, though the teaching of the schools does not come directly within the scope of University regulation, a matter closely related thereto does—the fixing of a standard qualifying for admission to the affiliated Colleges as we call it in Bengal, the Entrance Examination.

Now, if we consult the University Calendar and note the requirements there laid down, we can hardly describe the rules as on the whole setting the standard too low. A knowledge of English and of one other language, Arithmetic, elementary Algebra, four books of Euclid, with a general knowledge of history and geography, would seem an exacting enough demand on the intending College student. Yet it fails in one important particular ; it fails as a due test of the capacity of the scholar to profit by the courses of study on which he is to embark, if successful. For he will have to study in English, and this implies a ready familiarity with English spoken and written. In theory such a test is applied. Experience seems to prove that the test is insufficient. For here we are brought face to face with the peculiar difficulty of higher education in India.



In English a *minimum* proficiency will not suffice as in other subjects. We must have something like a real mastery from the beginning : otherwise all our pains are likely to be thrown away in the years of study which are to follow. All our future teaching will be conducted in English, and however widely we throw open the portals of the University to aspirants, the key to the inner door of knowledge is lost to him, who does not understand English. Our Entrance or Matriculation Examination ought, then, to be regarded mainly as a test of a capacity to take up University studies in English, a real test of English scholarship, or rather of a reasonable facility in understanding and writing English. The Calcutta University—the other universities agree in this—shows an appreciation of this point, in so far as it exacts a higher percentage of pass-marks in this subject than in others. The Calcutta regulations indicate also, with entire rightness, that English grammar and composition should be studied by Entrance students more with a view to be able *to write plain English correctly* than with a view to learn the philology of the English tongue (Calcutta University Calendar, p. 27). This is of the essence of the matter, if we hold firmly to it. But it is not all ; and, if we go on to examine how this vital end is to be secured, we do not find the safeguards adopted altogether satisfactory. For the percentage of marks which is set down as constituting the required proficiency in the English language is 33 out of 100 (Calcutta University Calendar, p. 122).

Now this third part of an approximate capacity 'to write plain English correctly,' I submit to be totally inadequate, at all events if papers of the right kind are set. Our examination ought to be a *strict* test of the sort of capacity we want for our purpose. We do not want a command of rare idiom or refinements of style ; we want grammatical soundness and a certain facility in dealing with ordinary straight-forward English. But so far the test must be strict. We want, in fact, a strict test within well-defined limits, not a high test. The capacity we want would, I believe, be best secured by *easy papers and a relatively high percentage of pass-marks*. I would have the percentage of pass-marks, in fact, not less than fifty : with the right sort of paper, I am not sure whether it should not be sixty or seventy. For what we *must* have is *real* knowledge up to a certain standard, the essential groundwork for understanding common literary English. It is of the utmost consequence that the knowledge, as far as it goes, shall be sound and exact, not a nice blend of accuracy and inaccuracy. 'Howlers,' *i.e.*, gross mistake in ordinary idiom, should be reckoned as fatal here as they are in Public School Latin prose, or in dictation for Civil Service clerkships. In scholarship bad idiom

is worse than complete ignorance. And what precisely we are producing at present in India, is a most pernicious fluency in bad English, to the entire confounding of all distinctions of right and wrong. Now we actually find that at Calcutta half marks entitle to a place in the First Division ; 40 to a place in the Second. (Calcutta University Calendar, p. 122). This is worse and worse. The rule does, indeed, apply to the aggregate, but it seems to suggest that a first-class proficiency in English may be similarly estimated at a knowledge nicely balanced between correctness and incorrectness, half-right and half-wrong. What we require, however, is a knowledge of a certain kind, which shall be wholly right, with just such an allowance for deficiencies as is a reasonable concession to human imperfection.

Of course, I am supposing papers which shall be a test of just what is essential and nothing more, not, as the University Statutes warn us, of philological erudition, or of literary proficiency, but a plain test of the power to understand and to write English. The paper that will do this fitly will be something of a work of art. But it ought not to be an impossible achievement to the trained faculty of the professional teacher of English. This much may, I think, be safely affirmed, that the questions will lie in the sphere of the familiar and ordinary, not of the rare and difficult. They should clearly be directed towards the points on which the average Indian student is weak ; in brief, to make use of a well-understood, if somewhat invidious, expression, to the correction of " Babu English." The use of the article and the choice of prepositions are notably such. I incline to the view that the test should be in grammar and translation only, apart from set books. This is the practice in the Punjab ; but by all the other Universities text-books are prescribed, and no doubt the text-book is indispensable for teaching purposes. We must throughout keep in mind the all-important practical end which our examination must subserve, reading English intelligently and writing English grammatically. If the paper we set before the candidate provides this test and no more, what I here maintain holds good, that 50 out of 100 would be a low rather than a high percentage of pass-marks.

The principle for which I am contending in regard to the method of marking in Pass examinations is of wide application, by no means confined to the Entrance Examination or to Indian Universities. I am convinced that, generally speaking, for ordinary Pass examinations relatively easy papers and a high standard of pass-marks make a better test than hard papers and a low standard. Precisely the opposite principle has been followed by the Calcutta University (and in India



generally) ; and, as this (I conceive) cardinal error will haunt us throughout, it is worth while to state briefly the reasons for the view here taken.

The grounds on which I believe in easy papers are the following : (1) We want, in the case of a Pass examination, a test of what everyone ought to know. Now, easy questions chosen with judgment are the best test of the grasp of the essentials of a subject ; (2) Comparatively easy questions are in most cases better calculated to defeat 'cram.' For 'hard passages,' stiff problems and difficulties generally, are comparatively few in number and can generally be 'got up' by a special effort of memory. Things easy and obvious are indefinitely numerous. Those who have the required amount of sound knowledge, answer them, those who have not, fail to do so ; (3) Relatively, easy questions sift the deserving from the undeserving more surely. Hard questions are apt to be a kind of lottery. The ill-taught may, by good luck, have picked up something about them, the better-taught by ill-luck have chanced to pass them by. If the questions are confined to matters which every qualified candidate may be expected to know, this cannot happen. Those who are fit to pass, know them all ; those who are unfit, cannot escape detection.

Further, a moderate length of paper is to be considered a part of the required easiness. Calcutta examiners have too often erred *criminally* in this respect. An excessively long paper exaggerates all the faults of unduly hard questions. (1) Every answer has to be written hurriedly, and the examiner must, in reason, take the hurry into account. This tends to the admission of a slipshod standard. (2) The candidate whose knowledge is thorough, has no time to show it, and so is reduced more to a level with the candidate whose knowledge is thin. (3) All the work shown must be hasty and poor in quality. The candidate knows this beforehand, and that he will only have time for sketchy answers, written down at lightning speed, and so gets up his subject according to the most approved methods of cram. The expectation of this type of paper act disastrously on the student's whole course of preparation.

These assertions are all, unavoidably, somewhat vague. The points I contend for may readily be misconceived. The suggestions made are to be interpreted with some degree of latitude ; they must be understood as tendencies, not as rigid rules. The particular vice of undue length is exemplified, as far as regards the University of Calcutta, only, or mainly, in the case of B. A. English papers. An examination paper is, as I have said, a work of art. The perfect achievement carries conviction with it. It is almost impossible to lay down rules.

Coming back once more to the test of English in the Entrance Examination, we want a paper of such moderate length, that a candidate of fair intelligence may be expected to work through the whole without undue hurry in the time allotted. The questions should be of such a nature that a properly qualified candidate may be expected to answer *all* with approximate correctness. As a concession to present usage, I would be content with a minimum of 50 as pass-marks. In reality, I believe it should be nearer 75. The qualification by which the suitability of the questions is to be determined, is the ability to write simple English accurately, this being taken as an indication of fair ability to read ordinary literary English with profit. There are strong reasons in favour of a *vivâ voce* test in English. Unfortunately, the practical difficulties in Bengal are almost insuperable. An oral test in reading English forms part of all Punjab examinations in which English is a subject, and ten marks only are assigned to it. I would rather have a more general *vivâ voce* test and a fixed minimum for passing. It would be interesting, at all events, to know how the plan is found to work at Lahore. The great number of candidates and the multiplication of centres for examination make it very difficult to conceive how an oral test could be applied in Bengal.

It is not easy to overstate the importance of the Entrance Examination, and I make no apology for the space I have given to its discussion. Rightly employed, it is the pivot of our whole system of higher education. On the one hand, it determines the quality of the material which is to form our College classes. The whole value of our College teaching turns upon the efficiency of the test we apply. Lectures delivered in English are of little use unless those who listen to them have enough knowledge of English to follow them readily. It is our business at once, in the interests of the Colleges and of each individual student, to make the standard high enough to ensure this. At present we scarcely do so. There ensues a whole train of undesirable consequences. On the other hand, the standard of the Entrance Examination influences the teaching of the schools. The school teaching will obviously be moulded a good deal by the character of the highest test for which it prepares. If we secure the right sort of test, we have done something to promote the right sort of teaching. Hence the extreme importance of the type of paper set.

The imperfect knowledge of English with which Indian students begin their College studies is, I believe, the main cause of the poor results of University teaching complained of. It is not by any means the only cause, but it is so much the chief cause, that, until it is remedied, nothing can be



hoped from other attempts to make College teaching more thorough. It is absolutely fundamental. While the present state of things continues, the labour of College teaching must necessarily be Sisyphean ; a task of the Danaïds ; a kind of making bricks without straw. I shall, however, for the sake of completeness, pass on briefly to such points in the College course as seem to have some bearing on the general issue.

If we could assume the existence of a satisfactory Entrance test, this would be a simpler matter. All the stages of University instruction must be connected, and, as far as possible, be so adjusted as to form a continuous course of mental training. The Indian Universities agree in requiring at least two further examinations between Matriculation and the Bachelor's degree—one general, the other somewhat specialised. In the Calcutta University the first is known as the F. A. (First Arts) Examination, the second as the B. A. Taking things as they are, we are seriously hampered by the consciousness that fully one-half of our students come to their courses of study with a very inadequate outfit. Bearing this in mind, as we are here bound to do, there can be little doubt that, at Calcutta, at all events, the F. A. Examination is too difficult. Its severity consists, not in the actual difficulty of the papers individually, or in the degree of proficiency required in any one subject, but in its comprehensiveness, the mass and variety of the matter taken up. So viewed, I regard it as one of the severest examinations I know of. The mere statement of the ground covered will, I think, bear me out. For the Calcutta First Arts Examination, there are six distinct branches of study prescribed ; English, a second language, Mathematics, elementary Physics and Chemistry, History and Logic. I submit that this is in itself a formidable list. When we note further that in English six text-books are prescribed (for the year 1898 the number is reduced to five, which is a move in the right direction), none of them easy to the average scholarship of our students ; that the Mathematics include five books of Euclid and Trigonometry, besides Arithmetic and Algebra, and that the history is the general history of Greece and Rome, I think it is clear that our student has his work well cut out for him in his first two years of College life. How then do students pass at all ? The explanation is that the standard is absurdly low. A 'pass' is secured by 30 per cent. in the aggregate (less than one-third marks), with a minimum of the same percentage in English, of 25 per cent. in Mathematics and the second language, and of 20 per cent. in Physics. Here, I maintain, the standard is as ridiculously below the mark as the above formidable array of subjects is excessive.

The Allahabad University separates A and B courses, which

is sound, if we must needs cover this whole extent of ground. Bombay provides two examinations in the first two years, a Previous Examination and an Intermediate or First B. A., which together have much the same range as the Calcutta F. A., but divide the work into two stages. This has the advantage of relieving the student's brain from the weight of so large a mass of multifarious learning at one time: it has the disadvantage of multiplying examinations, the burden of which is apt to tax the resources of Universities, which have not an unlimited field of qualified examiners to select from. At Allahabad the number of distinct subjects in each of the two courses is five, instead of six. In fact, all the other Universities are more moderate in this respect than Calcutta. At Madras there are five subjects, English, second language, Mathematics, History and *either* Physiology or Physiography; at Bombay *four* subjects, English, a classical language, History and Political Economy, with a choice of one out of six other subjects. The Punjab University requires three fixed subjects, English, a classical language, and Mathematics, and one further elective subject, with a choice of four. The two alternatives at Allahabad are respectively, the one—English, Mathematics (elementary), Deductive Logic, a classical language and either History or more advanced Mathematics; the other—English, Mathematics, elementary and advanced, Deductive Logic, a classical language, and elementary Physics and Chemistry.

Any of these schemes is preferable to that of the Calcutta University. Having regard to the wisdom of aiming at sound, rather than at varied, attainments, at a little well-known, rather than at much half-known, it would be well to restrict still further the amount of knowledge required in this examination. A differentiation of alternative courses, as at Allahabad, is one possible method. There is something, however, to be said in favour of reserving even this degree of specialisation in a Pass School to a later stage. This matter is closely bound up with another—the distinction of Honour courses and their partial or complete separation from the Pass course or courses. The want of suitable Honour courses is the second great defect of the Calcutta examination system. Now, the reason for the separation of Honour from Pass courses—one reason at all events—is that between the brain faculty of one young man and another, even when both belong to the educated classes, there is a great gulf, which one course of study and one and the same of examination paper cannot fitly measure. The difference of degree in capacity almost amounts to a difference in kind. This is the case in England, Scotland, and Ireland, and, as far as my experience goes, it is the



same in India also. If you take the ablest and the least able of our Indian undergraduates and lump them all together in one class and proceed to lecture to them collectively, you must either fritter away the time of the more intelligent, by regulating your teaching by the capacity of the duller-witted, or else you must be content to leave the slower minds behind entirely, with the result of rendering their attendance in the class-room superfluous. In all probability, if you have to face the problem practically, in the endeavour to strike a happy mean, you more or less fall into both errors and at one and the same time succeed in boring your cleverer pupils and in effectually bewildering the more stupid. Now, separate Honour courses afford a partial, if not a complete, solution of this difficulty. The wide difference of mental calibre exists; and, though no expedients will meet all degrees of intelligence perfectly, and all lectures and courses of study are probably a hindrance rather than a help to genius, something may be effected by a wise system of Honour courses. The genius is so exceptional a portent that he can be left out of the account. We require a limited Pass course for average ability, and we want an Honour course of quite a different kind for superior ability. Superior ability may be taken to mean a decided bent toward things of the mind, making intellectual pursuits easy and pleasant. Ordinary ability implies the absence of any such special tendency, and, in consequence, a greater or less difficulty in passing all examinations. A rough differentiation of minds into two classes, those which have and those which have not this facility, begins at school and goes on pretty consistently through life. Varieties of mental power are without doubt infinite, and no hard and fast line can be drawn; but we, at all events, gain something by recognising this broad division. Now, the Calcutta University does recognise this difference and does offer the opportunity of taking up Honours. The complaint is merely that it does not do so sufficiently. The objections I have to offer are two: (1) the separation of Pass and Honours begins too late; (2) the separation is not complete enough.

In the Calcutta course Honours can be taken only in the B. A. Examination. I mean by this distinct courses of study. The successful F. A. candidates are arranged in three divisions, which discriminate somewhat relative ability; but the work offered by all is the same. This means, then, that, for the first two years of their College career, the better students are held back by enforced attendance at Pass lectures innumerable, lectures necessarily adjusted to the moderate intelligence of the essential Pass mind. There is another inconvenience also. Not to speak of other varieties of apti-

tude, one mind has a natural bent to Mathematics and the exact sciences, another to literature, philosophy and history. These, for two most important years of their education, are forced into precisely the same groove, for they cannot, as at school, get promotion according to the progress they make; they must plod on with the dullest at both branches of study equally, notwithstanding the possibility that one or other requires less than half the time given to it. The student to whom the Pass course in Mathematics is mere child's play must attend the full course of lectures equally with one who delights in matters literary, but finds the difficulties of elementary mathematics all but insurmountable, and *vice versa*. Combining all these considerations, what I would advocate is this: I would have a general Pass course, with separate Honour courses as an alternative. The Pass course should comprise English, another language, Mathematics and either Logic or History, or some subject of the kind. The Honour courses should be two, and two only,—one literary, the other mathematical. The former should consist of a distinct and much fuller course of English, more advanced papers in some classical language, with an alternative special subject, such as Logic, Psychology, or Political Economy. The latter might consist of English, advanced mathematics and a choice of Physics, Chemistry, or Logic. The subsequent B. A. Examinations would then be carefully co-ordinated in correspondence with this scheme. There should first be a Pass degree admitting of some variety of specialisation. The range of subjects might well include, as now, English languages, Mathematics, History, Philosophy and Science. Three subjects should be required of all candidates, English being necessarily one of these; for the second there should be the choice of Mathematics and another language, for the third a choice of History, Philosophy, or Science. Honours should be obtainable in at least four branches of knowledge, (1) Literature, (2) Mathematics, (3) Science, (4) History and Philosophy. Literature should include English and one other language. The sciences would require some appropriate grouping. In History there might be a choice of ancient history, mainly Greece and Rome, and modern history, mainly India and England. The Philosophy going with this, or possibly constituting a fifth and separate school, should be mainly, I hold, the outlines of Greek Philosophy and a thorough study of the beginnings of modern speculation, from Descartes to Kant, with a first-hand knowledge of the leading books that mark definite steps in the succession of thought. This makes probably the best foundation for the larger study of modern philosophy. The outlines of Hindu philosophy might, perhaps, at choice, be substituted for Greek.



The M. A. system in India is well-devised, though I would rather see a good system of B. A. Honours in its place. The multiplication of examinations is a doubtful good. As things are, the M. A. degree furnishes the only existing test of really advanced studies in more special directions. All the Universities have an admirable scheme in their regulations, as regards both comprehensive range and judicious sub-division. In English more might be done, I think, to make this examination an efficient Honour School of English literature. Instead of a long and miscellaneous list of books and authors drawn from the whole range of English literature, it would be far better to appoint periods for special and thorough study, either a choice of periods yearly, or a succession of periods for different years in rotation. Thus, one year we might have early English Literature (Chaucer and his successors), the next the Elizabethan age, and so on. Particular books should also be specially prescribed within these periods. This would surely be better than a medley of books by authors of all periods, selected on no very obvious principle. We should be making possible, if not actually creating, in India, a school of original research in English literature. The special period would, of course, go along with a general knowledge of the History of English literature and languages. And why, by the way, the limitation of the M. A. degree in English to candidates whose vernacular is not English (Calcutta University Calendar, p. 40)? In view of the agitation for the recognition of English literature in English Universities, it seems a little superfluous.

The chief suggested changes in the Calcutta Examination system are, then, the following :—(1) Higher pass-marks for English at the Entrance Examination ; (2) Reduction of the number of subjects for the F. A., along with an increased minimum percentage ; (3) Distinct Honour courses for the F. A. and greater distinctness in Honour courses for the B. A. These I regard as needful alterations and as practically possible at the present time.

These measures would, I believe, tend all of them to the promotion of sounder learning, and do something to remove the reproach of the thinness and unprofitableness of its results under which the Calcutta University, in common with the other Indian Universities, at present labours. The higher pass-marks, in particular, would strike directly at the educational arch-enemy—that fetish of the Indian student in the present twilight of his understanding—cram. In the four letters of that inelegant but forcible word is contained the great stumbling block in the way of right learning, as far as the practical work of Indian Colleges is concerned. But, for the nonce, the chief

remedial efficacy rests, I think, with the Examiners. The evil has gone very far, and it becomes a matter of prime importance that, both in setting and in looking over papers, examiners should make it their first object to cope with it. Questions must be worded with a view to defeating cram. The examiner must consciously keep before his mind the duty of using what dexterity he can for the express purpose of detecting and circumventing cram. If it were once brought home to the student mind that 'cramming,' at all events in the gross form prevalent, 'did not pay,' because examiners, on principle, refused to give marks to mere unacknowledged quotations from published summaries and other obviously dishonest work, that, consequently, students who trusted to their power of learning by rote, not by understanding, generally failed to pass—if this conviction, I say, were once to get abroad, it would do more than any other external measure to cure this disease of sham knowledge with which our Universities are said, I fear, only too truly, to be afflicted. But, I believe, this question to be so much a matter of the 'ethos' of our whole educational system, that it will come up for fuller discussion later on.

So far, all has come clearly within the province of the University as an institution for holding examinations and conferring degrees. We are now brought to what is peculiar, and perhaps anomalous in the position of the Indian University. The Calcutta University is, strictly speaking, an examining University only. It does not itself undertake teaching. Yet it does, to a certain extent, regulate and control the teaching of the Colleges, through the system of affiliation. Thus (with the special exception of school-teachers) it makes a course of study at an affiliated College a condition of appearing at the F. A. and B. A. examinations, and it prescribes also the length of time during which such studies shall continue. On the other hand, the authorities of the College, as such, are altogether outside the University. They consist, variously, of officers of the Education Department under the order of the Director of Public Instruction, of gentlemen representing Missionary Societies, or appointed by local committees, the proprietors of private colleges together with those whom they employ. All these are alike free from the direct control of the University, and, conversely, they have not necessarily any voice in the decisions of the University. The University is a self-governing corporation: its ultimate authority is the Senate, or whole body of Fellows, with its Chancellor and Vice-Chancellor. The executive is, for ordinary purposes, vested in a much smaller body, the Syndicate, while special departments are controlled by Faculties and Boards of Studies, all these being so many committees appointed by, and from, the Senate. As



a matter of fact, a good many College professors are also Fellows of the University ; many act as examiners ; the Director of Public Instruction may happen to be also Vice-Chancellor ; but there is no necessary connection between the two functions of College and University ; these remain distinct institutions under separate management. In going on to speak of matters which concern rather the Colleges than the University, the appeal is no longer to the University as such, but to the various aforesaid governing bodies or persons. These authorities are of several kinds, corresponding to the status of the various Colleges, Government Colleges, Missionary Colleges and private institutions, whether State-aided or not. It will suffice if we confine ourselves to the Government Colleges directly managed by the Bengal Education Department ; for these, as vastly the most expensive, ought to set an example, and it is for these alone that Government is directly responsible. Three points call for notice—fees, attendance and the ordering of terms and vacations.

I incline to the opinion that fees in Government Colleges, other than the Presidency College, Calcutta, should be raised. There would probably be a falling off in numbers, at any rate at first ; but if, as might be hoped, there were a gain in comparative efficiency, the loss would be more than compensated. The better students would stay. If the result were, on the whole, to raise the standard of efficiency in Government Colleges, it would be quite in accordance with the principles with which we set out. The mere decrease in number might then be even regarded as an end to be desired.

The attendance rules fixed by the University do not in all respects work well. The proportion of attendance for admission to examinations is two-thirds of the lectures given (66 out of 100). Now, if a lecture course is of any value at all, it is of great importance to attend the whole course throughout. Otherwise, the thread of connexion is broken, and possibly the rest of the lectures lose much of the usefulness they would otherwise have had. Conceivably, it is better to leave the student to choose for himself whether he will attend lectures or not, according to his judgment of his own advantage. But, if we are to have any compulsory attendance at all, the percentage fixed at present by the University is insufficient. These things are in India a matter of progressive education, and the rule was, no doubt, a great innovation, and is a real advance on complete license. The question is only whether the times are not ripe for setting the standard higher. A requirement of 75 per cent., as at Allahabad, is better, but still not enough. We really want attendance at practically the whole course, with merely a small allowance of 10 or 15 per cent. to cover casual absences. In

that case, of course, special leave would have to be granted on medical certificate, and in some other cases, at the discretion of the lecturer, or of the Principal of the College. There are difficulties and inconveniences, no doubt, which the existing rule avoids; and I do not, without compunction, advocate a new worry for College Principals and Professors. But in one way the rule, as it now works, is even positively harmful and misleading. It tends to promote a tacit understanding that an attendance of two-thirds constitutes the whole duty of a student as regards the lectures of his College. Students are countenanced in clinging to the habit of absenting themselves from College at their own good pleasure. Classes tend to assemble in a somewhat casual manner and to dwindle away toward the end of the year, as student after student completes his percentage. We want a sharply-defined course of lectures, beginning and ending at the same time for all; and we want to claim the student's attendance at all, if possible. Either, then, the University rule should be made more stringent, or it should be done away with altogether, and the matter be left as part of the ordinary College discipline in the hands of Principals and Professors.

The division of the academic year into terms and vacations rests with the Education Department and other governing agencies, rather than with the University. At the same time it so far depends on the University, that the arrangements for the College naturally turn upon the time at which the University holds its examinations. The Syndicate fixes the dates at which examinations shall take place, the Director of Public Instruction and other authorities fix the dates on which Colleges shall close and re-open. The partial independence of University and College comes here to have a certain significance.

Now, I fail entirely to fathom the rationale of the arrangements at present prevailing. It may be conceded, that in India there are peculiar difficulties. Other plans have been tried. But I take that now in vogue in Bengal to be almost the worst conceivable. The F. A. and B. A. Examinations are held at the end of February, or the beginning of March—this year, for special reasons, it was early in February. Colleges in Bengal close for the summer vacation about the end of April. The consequences are a little extraordinary. For six weeks or a couple of months these Colleges are working with half classes, since, as soon as the examinations are over, the F. A. and B. A. candidates disperse. Indeed, as a matter of fact, they go away much earlier. Class attendance falls off early in January, sometimes before. I do not know how this affects the minds of others; to me it seems a plain absurdity. A second inconvenience for many of the larger Colleges is that, since they are examination centres, the work of the remaining



classes is suspended for three weeks or more, during which the Examination is being held. There is a similar break for the Entrance Examination, which precedes, either immediately, or with a week's interval between. The result is to disorganise College work for about a month. In India, we readily come to think that whatever is, is right, and it is, without doubt, a pestilent proceeding to disturb the quiet current in which things will move, if only let alone. Nevertheless, I do not think that anyone new to India would view this system with anything but astonishment.

Another inconvenience is this. Many examiners, perhaps most, are also teachers in Colleges. The papers come to be looked over while College work is still in part going on. The examiner cannot, then, in such cases give his whole time and an undivided mind to his work for the University. But the labour of looking over many hundred papers in a limited time is severe, at all events in English literature and similar subjects; and the University fixes a not too liberal time-limit under pains and penalties. A conflict between the claims of class-work and examination papers is very likely to ensue.

There is, I think, a solution which removes all these inconveniences—on one condition. This is, that we recognise the propriety and even desirability of a real 'long vacation.' It is this. Let the College Session end on the last Saturday in March. Let the F. A. and B. A. Examinations begin on the Monday following. The Entrance Examination might be held earlier, or later, as seems advisable, but if earlier, and if unavoidably in College buildings as examining centres, let classes be dismissed a week sooner. Let there be a Long Vacation for Colleges, of not less than three, and not more than four, months. The Colleges would thus re-open with all classes at the earliest on the last Monday in June, at latest on the last Monday in July. Possibly the best plan would be a compromise, and to let Colleges open on the Monday next preceding July 16th, giving a Long Vacation of just three months and a half. The worst of the heat would then be over in ordinary years. The advantages of this arrangement would, I conceive, be the following :—(1) Students would be at their homes during all the hottest and, on the whole, unhealthiest part of the year; (2) First and third year students would not fritter away time through the breaks caused by examinations; (3) They would enjoy a long rest from the routine of lectures, and a free time for much-needed continuous reading by themselves. Secondly (1) College professors are saved the waste of time of going daily to College for half-work only; (2) They are saved a vexatious interruption of the regular course of work; (3) They, too, can escape from the worst of the heat, and examiners can give all

their time to their exacting labours. Thirdly, there would be these advantages to the University :—(1) It could insist effectually on the presence of all examiners in Calcutta while the examinations were going on, and provide much better for the due co-operation of joint examiners. Co-Examiners could, if they pleased, spend a week together over their papers in Calcutta (or in the hills), comparing notes and settling doubtful points. They might even complete the whole task in company, and end with a general consultation on results. They would also have their whole time and energies to devote to the work of the University, and might thus be expected to carry it through both more thoroughly and more expeditiously.

In simplicity, seemliness and convenience this plan seems to me to have an immense advantage over the system, or no-system, at present in use. Is there anything to be said against it? I can conceive so little, that I altogether fail to understand why it has not been long ago adopted. We are brought to it, I think, by any thorough review of the factors of the problem. The chief examinations must come at the end of the academical year, and about the time of the main break in the year's work or long vacation. The Long Vacation in Bengal must come in the hot weather, covering, at all events, the two worst months, May and June. On the other hand, the examinations must be held before the season is so hot as to be excessively trying to candidates and others concerned.

The only reasonable objection I can think of is, that at the beginning of April it is already too hot for examinations in Calcutta. If that is held to be so, then simply the scheme must be shifted a fortnight or three weeks earlier. The necessary data I take to be that examinations must not begin *later* than the first week of April, or Colleges re-open *before* the 1st of July. Within these limits two or three alternatives are possible, while still keeping the Long Vacation within reasonable limits. It may last, as I at first suggested, from about the 1st April to about July 15th, or from, roughly, March 15th to July 1st, without affecting the practical advantages of this division. The change proposed, in fact, very little alters the time of examinations : it does alter very considerably the length of the vacation. And here objections may certainly be expected, though I have my own opinion of the reasonableness of some of them. The suggestion of a three or four months' vacation for colleges will inevitably astonish a good many excellent persons, some of whom ought to know better, and take away the breath of not a few whose position entitles their opinion to consideration. Yet, I scarcely think any valid objection can be urged against it. The strongest I can conceive is, that Indian students would not know what to do with a long vacation



if they got it. To this one might reply, 'then the sooner they learn the better.' But I do not think the assertion would prove to be altogether a true one. At all events, we can but give opportunities; we cannot force persons to make use of them. Possibly, particular students, and even also particular professors, might fail to make full and proper use of a long vacation; yet, it would not in the least follow that there ought not to be one. For a student who is determined to pursue his studies diligently, and for a College lecturer who desires to discharge his function efficiently, a long vacation is a necessity. The practice of nearly all the universities in the world supports this assertion, and a fair consideration of the conditions of the problem justifies the practice. To make this good, let me briefly consider the matter first from the standpoint of the student's needs, and secondly from the standpoint of the professor's duties.

A student at an Indian College usually attends four or five lectures daily, each of an hour's duration. During most of that time he is taking notes. Each lecture involves a certain amount of previous preparation, if the student is to profit by it, and still more calls for review and after-study. His time is thus fully taken up from day to day. He has little or no time for a general review of his work, or the attempt to get a firm grasp of a book or subject as a whole by connected reading. He wants, then, a solid time somewhere in his work for reading quietly through his books, and assimilating at leisure, as a whole, what his lectures have given him under high pressure and piecemeal. In short, the work of digesting knowledge requires time. A long vacation gives the continuous leisure needed, and it is a very foolish student who makes no use of it. The long vacation should be made an integral part of the student's regular scheme of work, and it is the part of the professor or College teacher to persuade him of this.

On the other hand, a professor at an Indian College has three or four hours lecturing to do daily. Lectures require preparation or revision: in English literature, in particular, the labour of preparation is unremitting. The correction of papers and essays occupies a greater or less time, according to the individual teacher's view of the value of these aids: with classes of from fifty to a hundred, the labour involved is, in any case, not slight. In a variety of other ways the College may, perhaps should, have claims on the teacher's time. Despite, I am aware, a somewhat widespread impression to the contrary, the days even of the Professor at a Government College are, during term time, pretty well occupied with the routine work of his College. But something more seems to be expected from a man whom you bring out to India at great cost as an

exponent of modern enlightenment and entitle Professor, than the mere routine of College teaching. He may, or rather should, 'profess' some branch of learning in particular, mathematics, literature, science; and, at all events, it seems to be implied that he does stand in the position of an authority in his own particular branch of learning. More than this, he may be expected to be a man of general culture and to keep abreast of the times. He, too, then, needs a long quiet time for special work,—a new course of lectures, the writing of a text-book, the task of keeping pace with the advances in his subject, and other occupations proper to his position and calling. He wants, in other words, a Long Vacation; and no vacation under three months is worthy of the name.

It is, I must confess, to me, astonishing that this necessity has so long been ignored in Bengal. Whether the responsibility lies with the University, the Education Department, or professors and teachers as a body, I do not know; but I consider it little short of scandalous that professors and heads of Colleges in Bengal contentedly acquiesce in a seven or eight weeks' summer vacation, and count it gain to be able to join the 'rush' to Darjeeling in the 'Pujahs.' The younger universities are ahead of us in this matter. Allahabad and the Punjab, at all events, have a long vacation of about eleven weeks—Allahabad from the last week in April to the middle of July, the Punjab, August 1st to October 15th. Even this is scanty, but it is enlightened, compared with the primitive notions prevailing in Bengal.

As regards the particular case of Government Colleges, there may, unless I am mistaken, be a certain amount of opposition to be expected, on the ground of a prejudice which, if it finds voice, is expressed by the question: 'Why should the Education Department be more favoured than other branches of Government service?' Does this need any answer? Only in so far as it betrays an unfortunate confusion of thought into which many otherwise sensible persons fall in India, which confusion extends to other matters also. Because the Government of India has seen fit to organise an Education Department, as part of which gentlemen of certain attainments in British Universities shall be invited to India to act as teachers at Government Colleges, that, therefore, their function is to be assimilated to that of other official persons, whereas, in truth, it still remains that of teaching. The 'Department,' rightly considered, is an accident; the proper work of an officer of the Education Department employed in a Government College is still to 'educate,' and, if he is to be of any use at all, his needs and claims must be considered as a member of the teaching profession, and not as of the class 'officials.' You can



regulate prisons and police, even make railways and repair roads, by official rule ; but you cannot train and teach in the higher sense. If you want your Colleges to be efficient, and the best work from your Professors, you must make such regulations as will conduce thereto. The comparison with other persons and occupations is quite irrelevant. Simply, the work is different, and different principles must be applied. The very point of view involved in the question implies hopeless misconception of the whole problem of education. Let Government, if it sees fit, refrain from providing University teaching in India ; but, if it continues to appoint the Professors at the leading educational institutions of the country, let these gentlemen be treated properly, and, by properly, I understand, as men having their functions and responsibilities are treated in other parts of the world.

But this departmental question is really very secondary. It is natural, perhaps, to think first of Government Colleges in connection with the University ; but there are many colleges besides these, and many lecturers and teachers, who are not Government servants. If the Government Colleges were kept open all the year round, it would still be expedient, on the grounds already set forth, to have a 'long vacation.' It is a question of practical principle, not of persons.

If the general argument be granted, it remains to determine who is to take the initiative, the University, the Education Department, or the private Colleges. I think we might naturally expect the Government Colleges to set the example ; and, if any pressure is needed, it ought to come from the University, as the authoritative guardian of the highest form of education.

This brings me again to the mutual relations of University and College. If the University could be taken as an incorporation of educated opinion, there would be more chance of good sense prevailing in this matter. But the Calcutta University, as at present constituted, can only doubtfully be regarded in that light. Now, considering that the whole scheme of University education is of English origin and derived from English Universities, I think it may reasonably be assumed that such trained faculty as exists in India, bearing upon a question of this sort, is to be found in the educational services of the various Indian provinces, supplemented by gentlemen, English or Indian, who have passed through a British University, whether engaged in teaching or not. The Calcutta University is a self-governing corporation ; the final authority rests with the Fellows. These now form a numerous body of a somewhat heterogeneous character. I protest my entire veneration for the University as an institu-

tion, and claim to pay due respect to the merits of the Fellows, individually considered. But I am free to own that I am not wholly satisfied of the competency of that august body, in its corporate capacity, to deal with a question involving technical experience in the work of education. That the Syndicate cannot always be trusted to act with discretion, a recent episode, which attracted some public attention, showed, I am afraid, rather glaringly. A self-governing University is, without doubt, the only possible ideal ; but it behoves us to be very careful to secure the right qualifications in the governors. Now, I incline to the opinion that a University, being an institution of a special nature, brought into existence for definite ends, within one particular branch or sphere of social organisation, is best controlled by men with a knowledge of the particular art or craft concerned. This view may be regarded as narrow ; but it has a certain superficial plausibility. A military institution is, I suppose, best managed by men who have had military training, a medical institution by physicians and surgeons, and so on. Therefore, I think it is not unreasonable to presume that the regulation and control of a University will be best carried on by men who have received a University education, and are themselves employed in the work of education, which it is the business of the University to direct and supervise. Is that the case at Calcutta ? Not altogether, I think. A certain number of such men are found among the members of the Senate and the Syndicate ; but I doubt if they usually form a majority of either body. I believe this to be a mistake. I regard it as an almost fatal mistake, a mistake which may, if care is not taken to remedy it, prove disastrous in the near future, that sufficient care has not been taken to secure a preponderance in our University counsels of such an expert element, in the endeavour to give a popular character and social weight to the University in its first creation and expansion.

The Indian Educational Review for April of this year, in commenting on the selection of Fellows for the Madras University, remarks :—" We shall never be satisfied with the composition of the Senate, until it contains a representative from at least every First Grade College affiliated to the University. As we have often remarked, it is a gross anomaly that these Colleges, which, we are informed by those who support the Indian University system, form an integral part of the University, often have no voice whatever in changes which may affect their constitution, nay even their very existence." This position is, on the whole, I think, a sound one ; but I would put the matter rather differently and say, that, in my opinion, all members of the teaching staff of



affiliated colleges, holding certain official positions and *at the same time* possessing suitable qualifications in other respects, should be *ex-officio* members of the governing body of the University. The proposition is, no doubt, revolutionary. My contention is merely that it is for the present a right provision for the Indian University. It would have the effect of drawing much closer the bond between the University and the Colleges, without entirely doing away with the separate individuality of either.

These more technical matters have taken up so much space that I must defer the other, and, as I think, yet more important, side of the educational problem, for later consideration. I have expressed my opinion on the points which have come under review freely, but, I hope, without undue presumption. The opinions expressed make no claim to originality. I do not put them forward as new ideas, but as true ideas. I am not greatly concerned whether or no they are strictly my own property. There simply seems to me a need to insist upon them in set form at the present time. To me, indeed, most of what I am advocating seems so trite as to be almost axiomatic. I should have thought its statement superfluous, did not facts conspicuously show the contrary. That this is so, is but another instance how widely men's opinion differ as a result of difference of training and association. The peculiar history and the peculiar difficulties of Indian educational problems are responsible for much that now exists; nor do I ignore that this is so. I am, nevertheless, of opinion that the difficulties must be wrestled with, until any disadvantage we rest under in India, as regards the fostering of liberal education, are step by step overcome. In the hope that much may be accomplished in the near future, I have ventured on a freedom of criticism which, if it leads to nothing else, may at least tend to rouse a more active interest in these matters. It would, at all events, be well if the Indian University, and in particular the Calcutta University, could be induced to take stock of its own institutions and fortify itself against critical eyes, through a heightened consciousness of its responsibilities, which might be a spur to more strenuous efforts after the attainment of the high ends for which it exists.

H. R. J.

Art. IX.—“JOHN JONES, SEBUNDY CORPS.”

**I**N the disused Christian Cemetery on Ross Island, Port Blair, there is a small wooden cross at the head of a grave, bearing the simple undated inscription—“John Jones, Sebundy Corps,” and it is round about this cross that I propose now to hang a little dissertation and make a little enquiry.

In the “Register of Europeans who have been buried in the Cemetery on Ross Island during the year 1860”, is to be found the following entry :—“——Jones; age——; Andaman Sebundy Corps; diarrhoea, admitted [to hospital] 14th November, 1860; died 14th November, 1860; Sergeant-Major.” So that it may be inferred that John Jones was Sergeant-Major of the Andaman Sebundy Corps, and died on the day he was admitted to hospital with diarrhoea, and was buried in such a hurry that neither his Christian name nor his age found its way into the Burial Register. On these facts we may ask with some show of fairness whether diarrhoea was not meant as an euphemism for cholera.

Captain J. C. Haughton, the Superintendent of the Penal Settlement of Port Blair of that time, in reporting the fact on the same day and asking for a new Sergeant-Major, merely stated that the deceased had “died suddenly.” As the Sebundies were a Tamil-speaking Corps, the Superintendent asked for a man who could understand Tamil, and accordingly, on the 21st of February, 1861, Sergeant Thomas Kenna was duly appointed Sergeant-Major of the Andaman Sebundy Corps by the Madras Government, and that Government asked the Government of India to arrange for his transmission to the Settlement.

In 1858 Dr. J. P. Walker, Superintendent of Port Blair, asked the Government of India for a Company of Sebundies for service in the Andaman Islands, and that Government asked the Madras Government to raise the Corps. This was on the 27th July, 1858. On the 23rd August the Madras Government held Consultations, and, among other subjects, dealt with that of the Andaman Sebundies. As the order relating to it is interesting in the present connexion, and also for allusions to other Sebundies, the first four paragraphs of it are given here in full :—

“(1). The Government of India request that measures may be taken for raising, in the Madras Presidency, a Company of Sibbundies for service in the Andaman Islands. The Company is to consist of 100 men with the usual number of Jemadars, Havildars, and Naiks, but no Subadars,



and the usual establishment, and is to be commanded by an European Uncovenanted Officer with a Second-in-command of the same class. The pay of all ranks is to be the same as that of the Sibbundy Corps in Ganjam.

"(2) It is observed that the pay of the several ranks in the Ganjam Sibbundies is that noted in the margin. The Goomsoor Sibbundies are commanded by the Military Assistant to the Agent, who draws a consolidated salary of Rupees 558-5-4 per mensem. The Purla Kemidy Sibbundies are under the com-

	per mensem.	
Sergeant-Major	... Rs. 60	
Sirdar ...	... " 40	
Jemadar ...	... " 16	
Duffadar ...	... " 10	
Naib-Duffadar	... " 7	
Naiques ...	... " 5½	
Peons ...	... " 4½	
Vakeel ...	... " 12½	

mand of the Military Assistant who has charge of that Estate, and draws, in addition to his Military pay and allowances, a Staff salary of Rs. 300 per mensem, which is paid from the funds of the Zemindary. These Military Assistants have judicial and other duties, besides the charge of the Sibbundies.

"(3). The Andaman Sibbundies are to be commanded, as intimated by the Government of India, by an Uncovenanted European Officer with a Second-in-command of the same class. It appears to the Governor-in-Council that, having regard to the nature of the service, the pay of the Commandant should not be less than the Staff salary assigned to the Military Assistant in charge of the Kemidy Sibbundies, or Rupees 300 per mensem; and that the pay of the Second-in-command should be half that sum, or Rupees 150 monthly.

"(4). The Governor-in-Council resolves, as the first step towards the formation of the Corps, to apply to His Excellency the Commander-in-Chief for two steady and intelligent Non-commissioned officers as Commandant and Second-in-command on the above salary of Rupees 300 and 150 respectively."

The Madras Government, through the Commander-in-Chief, selected, on the 13th September, Captain C. M. Bruce of the "Infantry Volunteer Guards, late in the Adjutant General's Office, and Staff-Sergeant on the list of Effective Supernumeraries," as Commandant of the "Andaman Sebundies," but he could find no recruits, owing to the rates of pay offered, men refusing to serve in the Andamans on the scale of pay of the Ganjam Sibbundi (*sic*) Corps. The Madras Government suggested accordingly, on the 6th October, that the scale of pay and privileges should be that of the Pegu Police Battalion. Captain, or Mr. Bruce, as the Government style him in a note of the same date, also, in alluding to the proposed recruits, compares their prospects with those of the

Madras Sapper Militia of the period. On the 12th November the Government of India asked the Madras Government to raise the Corps, practically on any reasonable terms it could.

By the 18th February, 1859, the Madras Government had made great progress with the Corps, raising it on the footing of the "Pegu Police Corps" (*sic*); and it then consisted of Captain C. M. Bruce, Commandant, Mr. A. McGregor, a Color-Sergeant of H. M's. 44th Regiment, Second-in-command, and 96 privates, of whom four, however, were "absent without leave." The composition of the Corps is interesting:—

" Christians ...	...	...	...	4
Mussalmans	...	...	...	18
Telingas, or Gentoos	...	...	...	28
Other castes	...	...	...	46

and the Commandant contemplated further getting "Brahmins and Rajpoots," Mahrattas, and "Indo-Britons" as recruits.

The pay of the Corps was as follows:—

Sirdar...	...	...	Rs. 60	per month.
Jemadar	...	...	" 40	" "
Havildar	...	...	" 20	" "
Naique	...	...	" 15	" "
Private	...	...	" 12	" "

The salaries assigned to the European Staff were: to the Commandant, Rupees 300, with an allowance of Rupees 30 for keeping and finding the Books of the Corps; to the Second-in-command Rupees 150; and to the Sergeant Major, Rupees 60 per mensem. So it was a much more costly establishment than that the Government originally contemplated.

It was assumed, *inter alia*, that the Sebundies would take their families with them to the Andamans, and several arrangements to this end were made.

In a curious note to the last-mentioned "Proceedings," the Madras Government said:—"Percussion fusils with bayonets are the description of arms in use with the Ganjam Sibbundies, but as the Ordnance Department were short of stock of this arm, the Commandant of the Andaman Corps has selected musket rifles with flint locks and swords, for present use." And this in 1859!

On the 29th April, 1859, the Government of India had progressed so far as to ask the Superintendent, Dr. Walker, to arrange for hutting the Corps, and by this time it had become confused as to spelling the Corp's name, for it now appears as the "Andaman Sibundy Corps." As an indication of the communications of the period, this letter of the 29th April is docketed as "received per 'Fire Queen,' 15th June." But on the same day Dr. Walker reported that he had plenty of accommodation. It was just as well that it was so, because,



on the afternoon of the 27th, the Andaman Seebundy (*sic*) Corps turned up at Port Blair, in the following strength, in the Transport "Malacca":—

" Commandant	...	...	...	1
Second-in-command	...	...	...	1
Sergeant-Major	...	...	...	1
Soobadar	...	..	...	1
Jemadar	...	...	...	1
Havildars	...	...	...	4
Naiks	..	...	...	3
Buglers	..	...	...	2
Privates (called also Sepoys)	...	...	...	107
Puckallies	...	...	...	2
Artificer	...	...	...	1
Servants and followers	..	...	...	121
European Clerk	...	...	...	1

226 persons."

On the 6th July the Government of India gave an Armourer to the Corps, and on the 15th 250 cots. The Supreme Government was a little late in the gift of the Armourer, for the Madras Government had anticipated it by attaching an Armourer to the Corps on the 9th June, "on a salary of Rupees 18 per mensem and rations, on the understanding that his salary will be raised hereafter if his conduct is good"; and he is the Artificer abovementioned. The European Clerk too, no doubt, was the representative of the curious "Vakeel" attached to the Ganjam Corps.

The very large number of followers is thus accounted for. In its "Proceedings" of the 13th and 16th May, 1859, the Madras Government noted that the Commandant of the Andaman Sibbundies reported that "the Corps have (*sic*) been put through a complete course of drill, blank firing and target practice included." The "target practice" with the arms selected would have been a curious sight to the present generation of soldiers, though it took place hardly 40 years ago. Then the Commandant went on to report that "63 of the men have expressed a wish to take their families with them to the number of 113 women and children, and a few more of the men have written to their relatives at up-country stations, and are waiting for a reply before giving a decided answer."

On this report, the Madras Government determined to send the Corps and its families to Port Blair. At the same time, it arranged for recruiting the "Pegu Police Corps" by volunteers from Regiments of the Line, and proposed the same method of recruiting for the "Andaman Sibbundies."

The 250 cots above alluded to was a very liberal allowance and was based on the following return of the gross strength, of the Corps, as proposed to be sent from Madras:—

" Corps.	2 Officers.
	128 Non-commissioned officers and privates.
Families.	82 men and women.
	38 children under 10 years.
<hr/>	
	250 souls."

So that it will be observed that every man, woman, and child, even to the babe in arms, was supplied with a cot. The return just mentioned was made out by the Superintendent of Marine at Madras on the statement of Mr. Bruce, but the Superintendent wisely added, "I cannot say whether all really went on board." As will have been seen, all did not go.

The Governments concerned next, with reference to the pensions of the Corps, went into correspondence on the question of the Register of Heirs, as to which a good deal is on record.

It will have been seen then that a great deal of trouble had been taken with the small Corps of Andaman Sibbundies so far, and that it had occupied a good deal of the attention of two august bodies; but when once it had set foot in the Andamans, there is nothing more to be found about it in Government correspondence until the Sergeant-Major, John Jones, died.

On the 3rd October, 1859, Captain J. C. Haughton, of the Moulmein Commission, succeeded Dr. Walker as Superintendent. He had been appointed as far back as the 20th July, on the resignation of Dr. Walker, tendered on the 25th March, "on promotion to the rank of Surgeon in the Army."

Captain Haughton did not approve of the Sibbundies, for, on the 8th April, 1860, he noted that "the Sibbundy Corps might at once be dispensed with," and on the 3rd December he was more explicit:—"The force stationed here, or rather, frequent rumours regarding it, have been a source of anxiety. Doubtless a native force could maintain the place, but it is my fixed belief that the substitution of a native for an European force in this isolated situation would entail frequent bloodshed. As far as I have the means of judging, the convicts here utterly despise the Sibbundy Guard, and if a like number of the guard and guarded is paraded, a physical cause will be at once apparent."

Accordingly, on the 8th June, 1861, the Government of India wrote that:—"the Madras Government will be informed of the decision come to regarding this Corps, and will be requested to stop all recruiting for it, and to take the first convenient opportunity of removing it from Port Blair, and disbanding it." Lastly, on the 2nd October, 1861, Captain Haughton reported that:—"the Steamer (*Dalhousie*) arrived on the 1st September from Madras, having left on the 27th August. She left



for Rangoon on the 4th September with the Sibbundy Corps." So that was the undignified end of the "Last of the Sebundies;" for, so far as I know, the Andaman Sibbundy Corps was the very last Corps raised under that title. It was not the last British Corps to maintain an existence. The "Sibbundy Corps of Sappers and Miners," employed at Darjeeling up till 1869, may claim to be the last to be disbanded, for, even in the conservative Madras Presidency, the Ganjam, the Goomsoor, the Kemidy (or Purla-Kemidy), and other Corps of Sibbundies, do not seem to have eked out an existence later than 1861. In the Bombay Presidency, among Native States, there would seem to be still Police Corps known as "Sibbundies," for there is a convict still in Port Blair, who arrived in 1886 from the Native State of Jasdan in Kathiawar, and who is described in his Nominal Roll as "a sepoy in the Sibandi of Vichhiâ."

Regarding Madras Sibbundies I have unearthed the following information: Morris' *Godavery District*, 1878, p. 265, says:— "[In 1795-6] a Sibbandi or Revenue Corps, 800 strong, was ordered to be raised at once, and Lieut. Bowness was appointed to the command. It was divided into several Companies, of which three were employed in this [Mogalturru] Division. It was reduced in number, however, after the apprehension which had called it into existence had passed away." At page 301 of the same work it is stated:— "[In 1857] the campaign [against Subareddi's insurgents about Rajahmundry] was continued by a Sibbandi or Revenue Corps, which was embodied for that purpose and placed under the command of Captain Alleyne F. F. Bloomfield." And lastly we have the following exceedingly interesting entry at page 309:— "The new organization of the Mofussil Police was introduced into the [Godavery] District in 1861-62. . . . The Sibbandi Corps which was raised at the time of Subareddi's disturbance, was reduced in number, and amalgamated with the Police, and the remnant was maintained as an armed reserve in full military efficiency. . . . Captain Bloomfield was appointed [Police] Superintendent of the District, and Lieut. Robertson Assistant-Superintendent. They had both been Officers of the Sibbandi Corps."

In a *Gazetteer of Southern India*, published by Pharoah & Co., Madras, 1855, under "Goomsoor," at page 16, it is stated that, when the "Honourable Mr. Russell was Commissioner in 1835-36, the Zemindar and the Company had disagreements, until the capture and imprisonment of the Zemindar, a more direct management of the Goomsoor tracts under British officers, and the establishment of a Corps of Hill Sebundies, closed the affair."

In Carmichael's *Vizagapatam*, 1869, there are a number of allusions to Sebundies ; some of which are interesting as showing how such "troops" were employed, and how their title has been spelt. Page 19. "When it was determined that the Governor's Agent should take up the administration of Jeypore [in the Vizagapatam District], it became necessary to improve one or other of the lines of ghaut between that country and the coast. . . . The line from Kasipuram over Galikonda to the head of the [Pettah] Ghaut, twelve miles short of the town of Jeypore, was first traced by the old Sibbundy Force under Lieutenants Dobree and Gordon [about 1855]."

The Circuit Committee, 1784, in reporting on the military resources of Zemindars of the Northern Circars, give a list of the troops kept up by them ; and, under the Zemindary of Vizianagram : (page 209 of Mr. Carmichael's work), thus we find :—"2,586 Sibbandy and Pike [Páik] peons for the forts and hilly countries, at 11,062-6-0 rupees monthly is 1,32,748-8-0 rupees." The Company found that the Zemindar was keeping up too many troops, and so (page 210) "they proposed to allow Viziam Raz to hold his fort with the personal equipage of 776 peons and 50 horse, and to keep up 2,000 Sibbandy for the occupation of the hill passes." Ten years later, in 1794, Viziam Raz in great trouble of body and mind (he died like a lion, fighting, soon afterwards), wrote to the Company a letter (page 217) "in which he attributed his disobedience of the Company's orders to the restraint laid upon him by the rabble of Sebundies and others that had gathered round him."

We have already heard of the Purla Kemidy Sebundies in 1859, and from Carmichael we learn (page 233) that in 1832, "amongst other outrages committed by the malcontents [of the Purla Kemidy Zemindary], an attack in open day was made on the party of Sibbandis posted at Boorjah : two Sepoys were killed and seven wounded, the village was plundered and ten muskets carried off." Of another Hill State, Golgondah, we read at page 237 :—"Once more in 1857-8, an insurrection broke out under the leadership of Sanyási Bhúpati, nephew of Chinna Bhúpati. The Sibbundies under Captain Owen, assisted by some of the leading Sirdars in the hills, promptly put it down."

At pp. 238-9, in reference to the Jeypore Zemindary, we come across the inflections and syntax of another most interesting Anglo-Indian word :—"Mr. Smollett [1849] took the step of *zafting* the four taluqs on the Eastern side of the Ghauts. . . . It was urged upon the Agent on some sides to *zaft* the entire estate. . . . At the conclusion of his arrangements for this *zaft*, the Agent returned to Headquarters, whence he had occasion shortly afterwards to detail his Assistant, Mr. Bird,



and Captain Haly, with a party of Sibbandis, on the rumour of another and lighter disturbance in a different quarter of the Zemindary. . . . The old man [the Rajah of Jeypore] proposed that an Assistant Agent should be settled on the frontier, and that all the principal places in Jeypore should be garrisoned by parties of Sibbandis." *Zaft* means "attached, sequestrated," *vide Madras Manual of Administration*, Vol. III (1893), page 1045, which gives this information under *Zuft*, and gives also "*Zuftly*, sequestrated," acknowledging the derivation to be Arabic *zabt*, the ordinary Indian term for "confiscated." This word is not in Yule, who gets no nearer than *Jubtee*, *Juptee*, a periodical confiscation of revenue by the Maharaja Sindhia (1808). In the *Bombay List of Places and Common Official Words* (1875), *sabti* and *japti* are given as terms for "attachment, &c."

The last we hear of the Sebundies in the Vizagapatam District is at page 257, where Captain Tennant, Deputy Inspector-General of Police, notes that:—"The Sibbandi Corps which replaced the detachments of the regular Army was incorporated with the constabulary, and a considerable number of the old police establishment joined the new force."

Amongst other things, Sebundies have been employed to put down the Meriah human sacrifices, for in the above book, page 344, extracts are given from a letter from Captain A. C. McNeill, Agent to the Governor-General in the Hill tracts of Orissa, dated 11th June, 1861. Para. 7 of this very interesting letter says:—"The Khonds also stated that they could not comprehend why the Khonds of Kasipur were allowed to sacrifice, while they [of Jeypore] and their neighbours of Chinna Kimedy were prohibited from doing so. This latter statement had reference to the attempt at [a Meriah] sacrifice in Tooamool, which attempt designing people informed the Jeypore Khonds had succeeded, although the Sirkar had interfered to prevent it, also that the Sebundies had been forced to retreat with severe loss. A guard of Sebundies has consequently been reposted at Ryabjee, and another at Mahasinghee of Chinna Kimedy."

From the *Memorials* (1865) of Macpherson, the well-known suppressor of the Meriah sacrifices, it would appear that the Sebundies of Ganjam, &c., were entirely Native troops, for, at page 160, it is stated that:—"In submitting to the Government an account of their proceedings [1841], Captain Macpherson proposed that a share of the Sebundies (the local force commanded by Gopee Sing, brother of Soondera Sing) should be made available for the execution of the decrees above the Ghauts."

At page 201, Baba Khan (MacPherson's factotum) writes (1844):—"Gopee Singh, the Sirdar of the Sebundies, proceeded to the village of Sam Bissye." Again, in 1846, we find, page

264, MacPherson making "the best arrangements he could for defence, by sending up a guard of Sebundies to repel the attacks upon Lienpurra." Lastly we find General Campbell, one of poor MacPherson's greatest opponents, in his *Personal Narrative* (1864), page 242, quoted in MacPherson's *Memorials*, page 376, saying that "a Khond whom I had induced to join my Corps of Sebundies, joined in repelling an attack.

The employment of Sebundies as a local protective force is to be gathered from Garstin's *South Arcot* (1878), which says, p. 226, "the Police of the Trivandipuram farm consisted (in 1775) of a Poligar and watchers. The Poligar's duties were the same as those of the Cuddalore Poligar, but he had in addition to provide a force of Sibbandi peons in time of war for the protection of the farm."

One might wager with safety, from the circumstances already described, that allusions to this class of irregular force would be found in contemporary accounts of fights with the Marathas and Rajputs, and with Tippu and Haidar Ali; and, sure enough, in a letter from "Major de Boigne, dated Camp at Patan, June 24th, 1790" (Seton-Karr's *Selections*, Vol. III, page 269), we read:—"The enemy's (of Sindhia) force consisted of—Rajepoot Sybundeas with 8 pieces of cannon." This letter is also quoted in full, and a long account of the Battle of Patan is given, in Compton's *Military Adventurers of Hindustan*, 1892, page 51. ff., where the letter is conjectured to be an English translation from the French of the great commander. In a footnote to page 53, Mr. Compton remarks "Sybundeas, Irregular Infantry."

In a letter dated "Tiagar, 19th December, 1790" (Seton-Karr, page 283), we read about "Calcourchy, which place fell to the enemy on the 17th instant, after the Amuldar with a few Sibundies, making some resistance against a detachment from Camaruddeen's [Tippoo's Lieutenant] camp with two guns."

The word appears also in a very interesting account, in Mackenzie's *Kistna District*, 1883, page 67, of DeBussy's arrangements for the Northern Circars in 1751-9, when he held them for the French. Quoting Mr. Grant, *Political Survey of the Northern Circars* (c. 1786), the book says:—"As a temporary expedient the Zemindars were bound to maintain the public peace; defray all charges of collections; and keep on foot a Sibbundy corps of 12,000 Infantry which, over and above the ordinary services of preserving the three yearly crops or enforcing their yearly divisions between the Government and the tenants, were liable to be called on to defeat any invading force."

So far we have been following the Sebundies and their



occupations and uses from the writings of those directly concerned with them. We may now profitably turn to current definitions of the term, before enquiring further into their history outside the modern Madras Presidency. In Brown's *Dictionary of Mixed Telugu*, Madras, 1852, we find :—"Sibbandi, Rangers, Militia, armed peons, Irregular Infantry. An establishment of clerks, peons, &c." He gives Sibbandi as the Telugu spelling, and Sibandī as the Hindustani spelling. In Johnson's *Persian Dictionary*, 1852, is given :—"Sibbandī, a soldier employed in collecting revenue, an establishment of peons, &c." I fancy, however, that Sibbandi is a case of Muhawara-i-Hind. Forbes' *Hindustani Dictionary*, 1857, gives :—*s.v.* "Sih, Sibbandi, a militia soldier, employed in collecting revenues." In the Glossary attached to Vol. II of Rice's *Mysore and Coorg* (1876), Appendix II, p. 25, Sibbandi is given as the equivalent for "an establishment." In Vol. III, (Glossary) of the *Madras Manual of Administration*, 1893, under sipah is to be found :—"Sibbundy (Sibbandi, Hind). - From above [sipah] bandi, Pers., recruitment. Militia for garrisons of forts, guard in towns and villages and for collection of revenue. So an establishment of clerks, peons, &c." For once, at any rate, it will be seen from what is unearthed in this article that the learned and laborious, but curiously old-world, authors of this truly colossal work (1162 pp. foolscap, closely printed double column brevier) are to be found tripping in a derivation.

Yule, who has usually something valuable to say about almost anything Anglo Indian, says, *Hobson-Jobson*, *s. v.* "Sebundy," that it is from the Persian "Sihbandi" (sih, "three.") "The rationale of the word is obscure to us. It is applied to irregular native soldiery, a sort of militia, or imperfectly disciplined troops for revenue or police duties, &c. Certain local infantry regiments were formerly officially termed Sebundy. The last official appearance of the title that we can find is in application to 'the Sebundy Corps of Sappers and Miners' employed at Darjeeling. This is in the *E. I. Register* down to July, 1869, after which the title does not appear in any official list. Of this Corps, if we are not mistaken, the present [1886] Field Marshal Lord Napier of Magdala was in charge, as Lieutenant Robert Napier, about 1840.

"*c.* 1778. 'At Dacca I made acquaintance with my venerable friend John Cowe. He had served in the Navy so far back as the memorable siege of Havannah, was reduced when a Lieutenant at the end of the American War, went out in the Company's Military service, and here I found him in command of a Regiment of Sebundeers, or native militia.' (Hon'ble R. Lindsay, in *Lives of the Lindsay's*, Vol. III, page 161).

" 1785. 'The Board were pleased to direct that, in order to supply the place of the Sebundy Corps, four regiments of Sepoys be employed in securing the collection of the Revenues' (In Seton-Karr, *Selections*, Vol. I, page 92).

" 'One considerable charge upon the Nabob's country was for extraordinary Sibbendies, sepoy, and horsemen, who appear to us to be a very unnecessary incumbrance upon the Revenue.' (Appendix to a speech on the Nabob of Arcot's Debts, in Burke's *Works*, Vol. IV, page 18, Edition 1852).

" 1796. 'The Collector at Midnapoor having reported the Sebundy Corps attached to that collectorship, sufficiently trained in their exercise; the Regular Sepoys who have been employed on that duty are to be withdrawn.' (G. O. 23rd February, in *Supplement to Code of Bengal Military Regulations*, 1799, page 145).

" 1803. 'The employment of these people, therefore, as Sebundy is advantageous—it lessens the number of idle and discontented at the time of general invasion and confusion.' (Wellington's *Despatches*, Edition 1837. Vol. II, page 170.)

" 1812. 'Sebundy, or Provincial Corps of native troops.' *Fifth Report*, page 38.

" 1861. 'Sliding down Mount Tendong, the summit of which, with snow lying there, we crossed, the Sebundy Sappers were employed cutting a passage for the mules; this delayed our march exceedingly.' *Report of Captain Impey, R. E.*, in Gawler's *Sikhim*, page 95).

To this may be added a quotation from Hunter's *Annals of Rural Bengal*, p. 77:—"On the 21st February, 1789, we find Mr. Keating (Collector of Beerbhoom) levying a Militia to act with the Regulars against the banditti who were sacking the country towns." If Sir W. Hunter's literary instincts had permitted him to give the redoubtable Mr. Keating's term for "Militia" in his own words, one suspects that Sebundy in some form or other was the word used.

The full quotation from Seton-Karr, *Selections*, Vol. I, p. 92, above given, would, however, go to show that Sebundies practically died out of lower Bengal soon after 1785, for it runs thus:—"Thursday, February 24th, 1785—The Board were pleased to direct that in order to supply the places of the Sebundy Corps, four regiments of Sepoys be employed in securing the collection of Revenues and maintaining the peace of the country; and Bograh, Rungpoor, Dacca, and Midnapore were fixed as stations for these Regiments. It is now resolved that Dinagepoor be a station instead of Rungpoor; and that a small detachment under the command of a Commissariat Officer be sent to Rangoon for the protection of the Frontier." Against the inference is the quotation



as to Midnapoor, given above from Yule, in 1796, for it is the fact that by 1822 the name seems to have disappeared from Bengal as one for irregular troops in that and the following years in the operations against Burma. Irregular Troops of all sorts, such as the Mug Levy, are mentioned in the documents of the period in Wilson's *Documents of the Burmese War*, 1827, but never once are they called Sebundies, so far as I can find out.

Yule has also a long but very interesting footnote attached to the article above mentioned:—"An application to Lord Napier, for corroboration of this reminiscence of many years back, drew from him the following interesting note:—Captain Gilmore of the Bengal Engineers was appointed to open the settlement of Darjeeling, and to raise two companies of Sebundy Sappers, in order to provide the necessary labour. He commenced the work, obtained some (Native) officers and N. C. Officers from the old Bengal Sappers, and enlisted about half of each Company. The first season found the little colony quite unprepared for the early commencement of the rains. All the coolies, who did not die, fled, and some of the Sappers deserted. Gilmore got sick; and in 1838 I was suddenly ordered from the extreme border of Bengal—Nyacollee—to relieve him for one month. I arrived somehow, with a pair of *pitarahs* as my sole possession. Just then our relations with Nepaul became strained, and it was thought desirable to complete the Sebundy Sappers with men from the Border Hills unconnected with Nepaul—Garrows and similar tribes. Through the Political Officer the necessary number of men were enlisted and sent to me. When they arrived, I found, instead of the 'fair recruits' announced, a number of most unfit men, some of them more or less crippled, or with defective sight. It seemed probable that, by the process known to us in India as *uddlee buddlee*, the original recruits had managed to insert substitutes during the journey. I was much embarrassed as to what I should do with them, but night was coming on, so I encamped them on the newly-opened road, the only clear space amid the dense jungle on either side. To complete my difficulty it began to rain, and I pitied my poor recruits. During the night there was a storm, and in the morning, to my intense relief, they had all disappeared. In the expressive words of my sergeant, there was not a 'visage' of the men left. The Sebundies were a local corps, designed to furnish a body of labourers fit for mountain work. They were armed, and expected to fight if necessary. Their pay was six rupees a month, instead of the sepoy's seven-half. The pensions of the native officers were smaller than in the regular army, which was a ground of complaint with the

Bengal Sappers, who never expected in accepting the new service that they would have lower pensions than those they enlisted for. I eventually completed the corps with Nepaulese, and, I think, left them in a satisfactory condition. I was for a long time their only Sergeant-Major. I supplied the Native Officers, and Non-Commissioned Officers from India with a good pea-jacket each, out of my private means, and with a little gold lace made them smart and happy. When I visited Darjeeling again in 1872, I found the remnant of my good Sapper Officers living as pensioners, and waiting to give me an affectionate welcome. My month's acting appointment was turned into four years. I walked thirty miles to get to the place, lived much in hovels, or temporary huts, thrown up by my hill-men, and derived more benefit from the climate than from my previous visit to England. I think I owe much practical teaching to the hill-men, the hills, and the climate. I learnt the worst the elements could do to me, very nearly, excepting earthquakes! And I think I was thus prepared for any hard work."

As to the origin of the term Sebundy, it will have been seen that Yule was doubtful, but that master of colloquialisms, Fallon, *Hindustani Dictionary*, 1879, is helpful here:—s. v. sih, (three) he gives. "Si-bandī, (1) a quarterly payment," and a quotation, '*Kaho unke hān kī sehbandī bat̃ gāī?*' "(2) a tribute, a contingent. (3) a militia soldier employed in collecting revenue or in police duties, &c. (4) charges in the revenue accounts for the maintenance of such troops. Sibandī ughānā, to levy or collect quarterly payments." Platts, who, in his *Urdu Dictionary*, 1884, had the advantage of both Fallon's and Forbes' labours, calls Sibandī, (s. v., sih), a three-monthly or quarterly payment, and of Sibandī ughānā he says it means to levy or collect three-monthly payments.

Further enlightenment is to be had of Whitworth's *Anglo-Indian Dictionary*, 1885, s. v. Sibandī, which the author says means, "irregular soldiery: a sort of militia, or imperfectly disciplined troops, maintained for the garrisons of forts, and guards in towns and villages, and for the collection of revenue." Under "Mulkgīrī," he gives still further valuable information. This word, he says, means "the taking possession of a country, the periodical incursion of a military force for the collection of tribute or revenue. Dr. Hove under date 2nd July, 1788, writes, "within a mile of the town [Limri], I met with Fatehsing's army consisting chiefly of horse, which collected the revenue from this District and the Cattyware country. I understand that Fatehsing sends yearly an army of 20,000 horse to the inland districts without which he could not obtain a single badam." Limri, which is the Limbdi of the *Bombay*



*Gazetteer*, Vol. III, Kathiawar, page 529 ff, was, in 1788, under Maratha sway, as the name "Fatehsing" would indicate; and on the present subject the *Gazetteer*, page 502, gives a bit of valuable information:—"The custom of paying tribute at this time and subsequently was, that if a Chief paid tribute when the Mulkgīrī troops were on the frontier, his territories were not invaded." The time spoken of was 1729 when Kathiawar was under the sway of the Mughals of Gujarat, and, as to the Maratha system of collecting money in 1757 and later, we learn, at page 304, that:—"The Maratha tribute-collecting expeditions were conducted on the model of those of the Mughal authorities from whom they borrowed the very names of their levies."

The curious reader, interested in tracing out how expressions and statements get into *Gazetteers*, may here turn with profit to the 1880 edition of Forbes' *Ras Mala*, where he will find the origin of the above in the Chapter on Moolukgeeree, page 394, and in Watson's introduction to the book, page viii.

The familiar use of the term Sibandi in the Bombay Presidency may be seen from several sources. Thus, in the Index and Glossary attached to Grant-Duff's *History of the Mahrattas* (1826), we find:—"Sebundee, irregular infantry, employed both in garrisoning forts, and in assisting in the police and other civil duties of the Province." Also, in *Bombay Places and Common Official Words*, 1875, an official publication, is to be found (page 65) under the latter designation:—"Sebundi, see Sibandi: Sibandi (Hill), militia, police."

Again, in the volumes of that truly wonderful work, the *Bombay Gazetteer*, there are repeated references to the Sibandis in the Native States. For instance, in Vol. V., page 183, we read that up to the date of that volume, 1880, the police establishment of the Rao of Cutch "consisted of a body of Musalman horse with a nominal strength of 95, and of an Arab militia, Sibandi," who were 300 strong in 1877-78. From Vol. VII, pages 465-8, we gather that in Baroda City up to 1860 "offences committed at night were under the cognizance of the Killedar, whose sibandis were in charge of the city at night. About 1860, the Kille sibandi was amalgamated with the Fauzdari sepoy, and a police battalion was formed." And lastly, when comparing past with present in 1886, the writer of this volume says: "The Tainati Sibandi was essentially a military force, and an offence against the public peace was in no vague sense treated as an act of rebellion against the Sovereign. It is impossible in this brief space to relate how absurd now seem the results of this old confusion of ideas between war and administration of justice. Now the Police Magistrate need not be considered a general, leading

the troops of the State to wage war on criminals." And yet we have evolved the now familiar Military Police within the last generation!

In Vol. XXIV, page 274, we come across a new form of the word in use at Kolhapur, for we read, "Independent of the rural police, each peta or sub-division was furnished with a body of shibandi, amounting together to 3,059. . . They were armed [in 1844-45] with swords and shields, and generally stationed at the Headquarters of the Sub-division." In 1869-70 this picturesque force had to give way to reform, in the shape of a body of police on the British Indian model (page 275).

The older books on this part of the Peninsula also have allusions to this class of soldier, for we read in Forbes' *Ras Mala* (edition 1880, page 583), that, "The Raja of Kot, who, at the time of Colonel Walker's Report in 1804, maintained a body of 150 horse and 2,000 seebundees, was sent to prison for neglecting a summons from a Magistrate", which was a drastic way of dealing with a native Chief, especially as we read at page 585, that he maintained them "like the troops of a sovereign prince!" In Appendix XIII to Malcolm's *Central India*, is attached a table of the "Military establishments of the Princes and Chiefs of Malwa", and we find from it that they all maintained Sebundies, from the 6,435 in number in the case of Scindia (*sic*) to the 150 of humble Ghuffoor Khan. They are always classed in this table with "garrisons of forts, irregulars", and always as foot soldiers. Also, in Tod's *Rajasthan*, 1832, Vol. II, page 247, we find in the establishment of the Rawul of Jessulmer, "Sebundies or Mercenaries, Rs. 75,000", and a footnote:—"Sebundies are mercenary soldiers in the fort, of whom 1,000 are estimated to cost 75,000 rupees annually."

But the use of Sibandis, not his own, in Sindhia's time may be gathered from a quotation from Vol. III of the *Bombay Gazetteer*, 1879, page 261 f; a passage throwing much light on pre-English Administration, and showing the Sibandi "in excelsis," so to speak. "When in 1853 His Highness Sindia handed over the Panch Mahals to British management, the greatest disorder prevailed. For years the district had been in the hands of revenue collectors, who, so long as they paid the amount they had bid, were allowed to manage the district as they chose. Under them was a military force, Sibandi, distributed through the districts in outposts (*thanas*). The contractors realised their revenue demands from the heads of single villages, from Chiefs and large landowners who held several villages, and from speculators who contracted for the revenue of village groups. In the unsettled state of the district most of the large landowners and sub-contractors had engaged mercenaries, and in several instances had attacked and driven away



the chief contractors' militia outposts. As the Chiefs seldom willingly paid tribute, sureties were required. These, in the absence of any rich body of merchants, were generally men in a high position in the contractor's forces. In return for their services as sureties, these mercenaries exacted interest from the Chiefs at 24 to 36 per cent., and if he could not pay, billeted on him a certain number of men. This was the general state of things in all parts of the country."

In a footnote to page 261 are given instances. "The Thakor of Sonipur south-east of Pavagada, proprietor of forty villages, chiefly waste, was indebted to the leaders of two mercenary gangs. The Thakor of Kanjeri was indebted to three different leaders of mercenaries. The Thakor of Bhimaria, a mere boy without male relatives, was deeply in debt. The Thakor of Mehrol, a man of extreme imbecility, was heavily in debt, particularly to two leaders of mercenaries, who kept him almost a prisoner in his own house. The Zemindar of Tanda was indebted for loans of money and arrears of pay to these men." The note gives also details of the debts which show their oppressive nature, *e.g.*, for lending Rs. 7,900, the pay of the mercenaries came to Rs. 1,930 per annum: for lending Rs. 6,360 it came to Rs. 1,420 per annum. Surely the Sibandi never anywhere rose higher than this.

There are a great number of references to Sebundies in Malcolm, besides that already given, some of which throw much light on manners and administration in Central India in days not long gone by. In a note to Vol. I, p. 136 (Ed. 1880), we get a contemporary definition (as also at Vol. II, p. 185):—"The term Sebundy, which means a local military, employed for the preserving of internal peace and to aid in revenue collections, may be literally interpreted 'Militia'". And further, p. 262, is given an instance of the definition:—"In all these services Ameer Khan [the famous Pindari] and his followers were employed as Sebundy, or local Militia, with an average monthly pay of three or four rupees a man, and from ten to fifteen to him as their commander."

At page 441 there is a further illustration:—"The Dewan [of a Maratha State] has, independent of this pay from the prince, also in some places an anna, or sixteenth part of a rupee, in others half of that amount, from the pay of the Sebundies or militia of the country."

When discussing the administration of revenue in Central India under Maratha rule, (Vol. II, page 23, note), Sir John Malcolm remarks:—

"The only grants in this village (Belloda, near Dhar), that appear excessive, are those to the Brahmins of 172 begahs, and 152 begahs to two Jemadars and five Choukeedars, but the

latter is the pay of these men, who are in fact the hereditary Sebundies, or soldiers of the village." Here there is an interesting insight into the manner in which the militia were paid.

At page 144, there is yet another view of them. "The Mewatties, a well-known Mahomedan tribe in Hindustan, have long resorted to Central India. They were entertained as Sebundies or Militia by the renters or managers of the country, and were deemed faithful to those they served : but great numbers of them, who settled in the villages, became professed depredators : they were, however, generally in bodies which Rajpoot lords and wealthy landholders could alone afford to maintain. But what entitles them to pre-eminence in this list is the lead which their Chiefs almost invariably took in all robberies upon a large scale, and their connivance and support of other classes. They were, in fact, in general, both the police soldiers and principal robbers : and the wealth and influence many of this tribe acquired enabled them often to escape detection, and almost always to evade punishment. Many of the Rajas and Chiefs, particularly those west of the Chumbul, entertained numerous bands of foreign troops to defend them against Mahrattas or Pindarries ; but they were unable to control those bodies of violent and unprincipled mercenaries, whose leaders changed from one service to another as their interest dictated ; and wherever they went, though always acting in the name of some local ruler, they were justly dreaded (particularly the Arabs) by the inhabitants, as the most lawless and profligate of all their oppressors. These mercenaries, who were chiefly from Arabia, Scind, and Mekran, came annually to Central India for service. That country was also the resort of a number of Patans from Western Hindustan. No act rendered the British power more popular than the complete expulsion of these trained robbers, none of whom remain [1818]. The character of all of them was nearly the same : their chief features were that of insolence and ferocity, which a sense of a stronger frame of body and mind inspires in men, who, like them, were mere soldiers of fortune with no knowledge whatever beyond that of the profession of arms by which they were supported, and whose leading principle of action was a contempt of the native population of the country in which they were employed." A very different picture this from that drawn by Captain Haughton of the Sebundies raised under British arrangements !

At page 198 we have, however, an opposite view of the Sebundy when treated properly :—"The revenues of Dhar were in 1819 two lacs and sixty-seven thousand : and in 1817, when the British troops entered Central India, they certainly did not produce 20,000 rupees. In that year this petty State



had a predatory army of 8,000 men : it has now a well paid body of 300 horse and 800 irregulars and Sebundies." At page 202 Sir John Malcolm uses almost the same language of the "Rajpoot Principalities West and East of the Chumbul."

Lastly, as regards Central India, the Sebundy, as might be expected, found a place in the formal treaties and agreements of the period. Malcolm, Vol. II, Appendix page 341, gives the substance of the treaty with the State of Dewass, one of the terms of which was :—"to keep in service a contingent of fifty good horse and fifty infantry, to be at the disposal of the British Government; the remaining troops, Sebundies, &c., to be at command when required." And in the very last item in "the list of Miscellaneous Settlements, &c., with petty Chiefs, Thakoors, &c.," at page 351, we find the following quaint entry :—"Kishen Row Madhoo Biscottah with the British Government. The British Government to pay Madhoo Row 2,700 rupees annually in lieu of zemindary dues upon the Pergunnahs of Kusroude, Kaunapoor, and Burdiah, and a grant in Enam of the village of Chota Kusroude, paying for four successive years 500 rupees annually as his share of Sebundy expenses. July, 1819."

Sir John Malcolm's observations are confirmed by a contemporary vernacular work, the *Tarikh-i-Sorath*, compiled by Diwan Ranchodji Amarji, of Junâgadh, about 1825, chiefly from his own experiences. At page 177 of Dr. Burgess' edition, 1882, we find :—"Since Samvat 1836 [1779 A. D.], the Fort of Verâval had belonged to the Divân Raghunâthji, but three confidential leaders of sibandi, namely, Jamadars Rabyâ, Rakhyah, and Nebhor, and Taj Muhammad Qamar were decoyed by the Nawab to his own side from motives of gain, and they, forgetting the obligations under which they were to the Divân Sâheb Raghunâthji, expelled him from the fort."

The next mention of such troops is very interesting, as giving a new form to the name, probably due to folk-etymology :—"It happened that Mehtâ Purbhâshankar, a Bânsvâdâ Nâgar, who had been a confidential servant of Divân Dulabhji,—swerved from his loyalty in consequence of the events of the times, and instigated the Jamadârs of the Sirbandi, namely, Rayah (Rabi), and Punah, and Jesâ, and Rahîm, and Avud Ali to expel Dulabhji, which they did at the beginning of the rainy season." The Diwan seems to have recovered himself, however, for at page 183 we find :—"Divân Ragunâthji and Govindji managed the army, while Dulabhji, who suffered much from dropsy, remained in Junâgadh, and sent to them the war material they required, and took care that the Sibandis were paid."

Lastly we read at page 293, that "Vithal Rao began by introducing several Arab regiments into Nâgar under the command of Bodar Khatri and others, while Sundarji Khatri, the Nâyib of Ballantyne Sâheb on the other hand, as well as the new Sibandis, who had always been desirous of obtaining employment, all contributed to drain the treasury of the Jâm Sâheb, and succeeded, on account of the misunderstanding between Jagjivan and Motîrâm, in emptying it."

I must here quote a possibly curious development of the word Sihbandi. In Carmichael's *Vizagapatam*, there is given a "comparative glossary of the wild tribes of the District," and at page 363 we read:—"English, grantor: Highland Khond, sibondi: Saura, savakari (soucar)." One would like to believe that, as the Sauras looked upon the local usurer as the "grantor" of all things worth having, so the Highland Khonds looked upon the Sibandis, who collected their taxes and fees, and kept them in order, as the authors and givers of all things!

The word Sihbandi as a vernacular term, however, so far as I can gather, belongs to South India, as it does not appear in Elliot's *Glossaries*, Carnegy's *Kachahri Technicalities*, Crookes' *Rural Glossary*, Grierson's *Bihar Peasant Life*, and similar works relating to Northern India. The only reference to the word in a work relating to really Northern Indian affairs that I have come across is in Francklin's *Military Memoirs of Mr. George Thomas*, 1803, and then only in describing the troops in the Maratha service. "Force of Ali Behaudur. Ali Behaudur, the Mahratta Chief, who is in possession of the open country, as likewise several of the strongholds in Boondeelcund, has four battalions. . . . without discipline or military regulation of any kind and may be considered as a rabble. The infantry consists of Rohillas, Boondeelahs and Malwa Sebundys, who are armed with matchlocks."

From the evidence above collected, we have, then, in the term "Sebundy," an interesting connecting link between old and modern times in India. We find the Mughals collecting revenue and tribute by periodical raids, with the aid of temporary irregular troops, into the more distant parts of their territories; a custom chiefly arising, it would appear, out of the disorder which ensued on the death of the great Mogul, Aurangzeb, in 1707 (the term Sihbandi does not occur in the list of infantry in the *Ain Akbari*, 1596),—and continued over most parts of India by the Marathas up to the days of British possession. We find the British Government succeeding to Maratha customs, and using irregular forces, raised for the occasion, to suppress local rebellion, and as rough police until the days of the Police Act of 1861, and then turning such of the irregular



troops as existed by degrees into regular police. We find police forces required for outlying provinces raised under the new title, but on the old system, as in the case of the Pegu Police Corps or Battalion, and for a time the old title surviving in isolated cases. And lastly in our own times, regular Police having been everywhere established, we have ourselves looked on while the Government, when taking possession of, or bringing into order, new areas, has found it inconvenient to keep up regular troops for the maintenance of order and has organized Military Police, as in Burma, Assam, and the Andamans; these Military Police being the direct descendants of the revenue-collecting Mulkigiri troops, and the semi-police, semi-military Sebundies. Perhaps the very latest, and not by any means the least interesting developments of the Sebundy Corps are the Burma Sapper and Miner Corps and the Karen Battalion, maintained at Mandalay and in Upper Burma, and locally raised in 1887-88, precisely after the manner of their predecessors.

One word more. On the 18th February, 1859, the Madras Government wrote that :—"The arms and accoutrements were directed to be the same as those in use with the Ganjam Sibundies, and it has been decided that the full dress will be of dark blue cloth made up, not like the tunic, but as the native *ungreekah*, and set off with red piping. The undress clothing will be entirely of *khakee*."

On the subject of *khaki*, Yule has, as usual, an interesting note, but he has only one quotation of 1878; so the one above given is the earlier by 20 years. What Yule says, *Hobson-Jobson*, s. v., *Khakee*, is as follows:—" *Khakee*, from Hindustani ' *khaki*', dusty, or dust-coloured, 'from Persian' ' *hhak*', earth, or dust'; applied to a kind of light drab or chocolate-coloured cloth. This was the colour of the uniform worn by some of the Punjab Regiments at the siege of Dehli, and became very popular in the army generally during the campaigns of 1857-58, being adopted as a convenient material by many other Corps. The original khakee was a stout cotton cloth, but the colour was also used in broadcloth. It is said that it is about to be introduced into the army generally. 1878. 'The Amir, we may mention, wore a *khaki* suit, edged with gold, and the well-known Herati cap' ".—(*Saturday Review*, November 30th, page 683.)

I may add that the word is in Fallon's *Dictionary of Hindustani* (1879), which is full of colloquialisms, as the "Uniform of Panjabi Infantry", and in this he is followed by Platts, *Urdu Dictionary*, 1884. But I cannot find it in Forbes' *Hindustani Dictionary*, 1857, in Bates' *Hindi Dictionary* 1875, in the *Panjabi Dictionary* of 1854, or in Brown's *Dictionary of Mixed Telugu*, 1852.

I may here give, as a final word, a little evidence of my own. When I joined the First Goorkha Light Infantry in 1878, the uniform was red and khaki: red, I fancy, in remembrance of its being the old and faithful Bengal 66th, and khaki in memory of its share of the days in front of Delhi. A victim to the old order changing, the Regiment is now the First Gurkha Rifles, dressed in green with scarlet facings. The regiments of the Panjab Frontier Force, the original wearers of "Drab" in the British Army, were mostly raised in 1846, and the following years, and hence "Khakee" should date from about then, unless that Force in its turn copied some other Army.

R. C. TEMPLE.

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## THE QUARTER.

A MARKED improvement in the relations between England and Germany; the trial and conviction of Dr. Jameson and his comrades; the extension of the native rising in Rhodesia; the operations of the Egyptian army in the Soudan; serious insurrections against Turkish authority in Crete and Macedonia; the passing of the Irish Land Bill through both Houses of the British Parliament; the visit of Li Hung Chang, the Chinese Ambassador to Europe; the arbitration negotiations between Great Britain and the United States; the proceedings in connexion with the approaching Presidential election in the latter country, and the death of the Sultan of Zanzibar, followed by a *Coup d'état* and the bombardment of the palace by British gun-boats, are the most noteworthy of the events of the past quarter, which, as far as India is concerned, has been almost wholly bare of incident.

The only really serious plea raised by the defence in the Jameson case was the technical one that the Foreign Enlistment Act was not in operation at Mafeking or Pitsani Pitlogo. For the rest, Sir Edward Clarke contented himself with denying all hostile intention against the Boer Government on the part of his clients, and contending that the preparations at Mafeking in November and December were necessary in connexion with the transfer of the Bechuanaland Police to the Chartered Company. He was compelled, however, to admit that Dr. Jameson had in his mind the possibility of having to operate within the Transvaal for the protection of the people of Johannesburg, and to argue that what occurred on the march was irrelevant. But the facts on the other side were overwhelming, and the summing up of the Lord Chief Justice left no loophole of escape. In point of law, he said, "the expedition was not less an expedition against the dominion of a friendly State if it was not aimed at overthrowing the Government, or if it was prompted by philanthropic or humane motives, so long as it was designed to enter the Transvaal with the intention of interfering, either by show of force or by action, with the administration of the Transvaal laws or of overawing the Government in order to get a change of the laws." He concluded by putting to the jury four questions, which he asked them to answer, though they might, if they chose, return a general verdict. The questions were as follows:—"Were the defendants, or any and each of them, engaged in the preparation of a military expedition against

a friendly State—namely, the South African Republic? Were the defendants engaged in assisting such preparation, or did they aid and abet in it? Were the defendants employed in any capacity in such expedition? Did the Queen exercise sovereignty and dominion in the district in which Pitsani Pitlogo is?” After an hour’s deliberation the jury gave affirmative answers to all these questions, and afterwards, by direction of the Court, they returned a verdict of guilty against all the defendants, adding, however, a rider to the effect that the State of Johannesburg furnished great provocation. The Lord Chief Justice then sentenced Dr. Jameson to fifteen months’, Sir J. Willoughby to ten months’, Major Robert White to seven months’, and Colonel Henry White, Colonel Grey and Major Coventry each to five months’ imprisonment without hard labour. The defendants were at first treated as ordinary prisoners and removed to Wormwood Scrubs prison; but ultimately the Crown exercised its prerogative and directed that they should be treated as first-class misdemeanants, on which they were re-transferred to Holloway Gaol.

The trial was attended by something like a revulsion of popular feeling in England, and the justice of the verdict is generally admitted, while on the Continent it is applauded as a proof of the impartiality of British Judges.

While the trial was going on, the Committee of investigation appointed by the Cape Assembly submitted their report, a conjunction of events which has been severely and not unjustly criticised, as opposed to British notions of what is fair, or even decent, in such matters. The report is most damning both of Mr. Rhodes and of the Chartered Company’s officials at Capetown. In it the Committee declare their conviction that the latter knew, or were in a position to know, of the plot, and two of the directors, Mr. Rhodes and Mr. Beit, and the Administrator, Dr. Jameson, and the Secretary were “active as promoters and moving spirits throughout.” “The date of the inroad was fixed weeks beforehand, and the letter of invitation was obtained four weeks before the ostensible date of signature.” “As regards the Right Hon. Cecil Rhodes, the Committee can come to no other conclusion than that he was thoroughly acquainted with the preparations that led to the inroad, and that in his capacity as controller of three great joint-stock companies—the British South Africa, the De Beers, and the Gold Fields of South Africa—he directed and controlled the combination which rendered such a proceeding as the Jameson Raid possible.”

The general conclusion come to by the Committee is that—“Upon these facts it would appear that Mr. Rhodes did not direct or approve of Dr. Jameson entering the territory of the South African Republic at the precise time when he did do



so, but the Committee cannot find that that fact relieves Mr. Rhodes from responsibility for the unfortunate occurrence which took place. Even if Dr. Jameson be primarily responsible for the last fatal step, Mr. Rhodes cannot escape the responsibility of a movement which had been arranged, with his concurrence, to take place at the precise time that it did, if circumstances had been favourable at Johannesburg."

In view of the Report, Mr. Rhodes has since, somewhat superfluously, as it would seem, offered to place himself at the disposal of His Majesty's Government for trial. The Government have determined to appoint a Parliamentary Committee of fifteen members to enquire into the Chartered Company's administration and report thereon, and further to report what alterations are desirable in the Government of the territories under the Company. Messrs. Rhodes, Beit and Harris have all been permitted to resign their appointments under the Company; but in announcing their acceptance of Mr. Rhodes' resignation, the Directors stated that he would remain in Rhodesia to assist the Company.

There has been a revival and serious extension of the rebellion in Matabeleland, and the Mashonas have also risen in arms against the settlers, a large number of whom have been murdered in the Salisbury and Mazoe districts. An attack by General Carrington on the rebel stronghold in the Matoppo Hills was only partially successful. Not only are our forces evidently too weak in numbers to make much impression on the enemy, but, owing to want of supplies or the means of transporting them, it appears impossible to re-inforce them with advantage. The latest news, however, is that the rebels are getting tired of the war, and negotiations are on foot between Mr. Rhodes and the leading chiefs which, it is hoped, will result in their submission.

There seems to be no doubt that the chief cause of the rising was the stringent measures, including the slaughtering of diseased cattle, which the Chartered Company felt themselves compelled to take to check the spread of the epidemic of rinderpest which had broken out.

The Egyptian force assembled at Akashah, and consisting of three brigades, with artillery and Maxim guns, began their advance from that place, under General Kitchener, on the 6th June, and, early the next morning, captured Firkat, where the enemy were completely surprised, in very dashing style. The dervishes fought with determination for some time, but were, in the end, completely routed, losing about a thousand in killed, besides many prisoners, and all their camp and transport. Among the killed were some of their principal leaders, and it is said that only about two hundred of their number escaped. The loss on the Egyptian side was twenty killed and eighty

wounded, the latter including three officers. A portion of the force, under Major Burn-Murdoch subsequently advanced and occupied Suardeh without opposition.

It is officially announced that the Government have determined to occupy Dongola as soon as the state of the Nile admits of it, and preparations for the further advance are now nearly completed, a railway having been constructed to Kosheh which, however, has just been seriously damaged by storms, and the gun-boats having all passed the cataracts.

Up to Dongola, General Kitchener has been given a free hand, but the Government disavow any immediate intention of advancing beyond that place. Their moderation in this respect, however, is admittedly based on financial considerations alone, and Lord Salisbury, in a speech in the House of Lords, in reply to Lord Rosebery, has boldly declared that the recovery of Khartoum is essential to the safety of Egypt.

The case for the Government policy, which commands the warm approval of the Triple Alliance and the opposition to which at Home has lately very much toned down, is strongly put by the writer of an exceedingly able article on the situation in Egypt, in the *Edinburgh Review* for July.

"For mere purposes of defence," he says, "no doubt her present frontiers are as good as any to ward off Dervish raids. But is there never to be an end of raiding Dervishes? Is Egypt to acquiesce for ever in the presence at her gates, of a barbarous Military State, with which not even a truce is possible, because its whole *raison d'être* is to wage incessant war, and primarily to wage war on Egypt? A man may be fairly confident that his doors and shutters are strong enough to keep out burglars, but for all that he will hardly feel at ease with a gang of professional burglars permanently located in the adjoining street. It is not a better frontier that Egypt wants, but better neighbours. It may or may not be to her advantage to own Khartoum, but it must be enormously to her advantage to make an end of its present owners—to destroy, as soon as she can destroy, that hostile power on her flank which exists to compass her destruction. \* \* \* It is sheer necessity alone—her inability to put an end to the intolerable—— which has caused Egypt to acquiesce for eleven years in the establishment of an implacable foe upon her southern frontier. That she has been able to exist at all with such a neighbour has been due, in the first instance, to the presence of a large British garrison, and latterly to the success of British officers in creating a native army which is an efficient fighting machine. The first duty of that army has been to protect Egypt against the permanent menace of Mahdism. Its ultimate object must be to put an end to that menace for good and all."



That, it seems to us, is as nearly as possible unanswerable. It is as well, however, that the Government should be under no delusions as to the magnitude of the task it is undertaking, and it is quite possible to draw an unduly favourable augury in this respect from the victory snatched from an incompetent commander and a sleeping enemy at Firkat.

The Government of India sent Home a very outspoken and strongly argued despatch against the decision of the Government to charge India with the ordinary expenses of the contingent despatched from this country to Suakim. From that decision, however, the Government, in spite of a strong expression of feeling in the country that it was at once unjust and paltry, and the opposition of a considerable section of its own supporters, declined to swerve; and an amendment moved by Mr. John Morley, in the House, condemning it, was defeated by a large, though a much reduced, majority. Otherwise, India may fairly congratulate herself on the result of the discussion, which has elicited from Lord George Hamilton an assurance that, in the event of her requiring temporary military aid from England, she will obtain it on similar terms.

Among the witnesses examined by the Commission on Indian Expenditure, which has lately opened its doors to the reporters for the Press, have been Lords Wolseley and Cromer. The former, in the course of his evidence, which was mainly directed to showing that India ought to be charged for all expenditure, military or naval, which, but for her existence, would not have been incurred, and that the short-service system has proved both economical and otherwise beneficial to her, made some very uncalled for and injudicious remarks regarding the Indian army, which have created widespread indignation among Anglo-Indians both in this country and in England. Having declared that the whole English army maintained in England was a reserve to be sent to India whenever India required it, and being asked whether the Indian army also did not serve as a reserve for England, he replied that, though occasionally two or three battalions were employed for English requirements for a few months, we should not like to put Indian troops in front of European soldiers, adding: "I should be very sorry to go to war with the native troops of India to fight France or Germany, or any other State in the world." This has been interpreted as a disparagement of the fighting qualities of Indian troops, and, though it will bear a different construction, would have been better unsaid. It is not certain, however, that Mr. Caine, who pressed the question regarding the value of Indian troops was not as much to blame for it as the witness.

Lord Cromer, in the course of his evidence, which turned

mainly on the questions of financial control in India, the respective powers of the Viceroy and his Council, the Financial Member and the Secretary of State, and the constitution of the Council in its bearing on financial administration, supported Mr. Balfour's suggestion of a tribunal of arbitration for the decision of disputes as to the apportionment of charges between India in England in cases in which both are interested.

"My view about the question of the Home charges," he said, "is this. I believe there is a very general wish in this country, in Parliament, and among Ministers of whatever party, not only to be just, but to be generous to India; and I think it would be an exceedingly good thing if you could arrange to have a court of arbitration to deal with these matters. It is not only desirable that the settlement should be just; but it is of the highest importance that everybody in India, not only the natives, but the Europeans and the Government themselves, should think that it is just. I do not think that under the present system there is any means of convincing the people of India on this point. The matter is supposed to be arranged between the departments, and the general opinion is that the English view is advocated with greater strength and more successfully than the Indian view. The very fact that this opinion exists, whether it is right or wrong, is an evil. A great many matters might be the subject of equitable compromise. Take, for instance, the case of Aden. It is perfectly impossible for any one to lay down chapter and verse as to how much India should pay for Aden. She is very much interested, of course; but so are Australia, Hongkong, the Straits Settlements and English commerce generally."

In the course of his further examination he added that he thought there should be a permanent board of three or five persons, and that, if its awards were liable to be over-ruled, it should be only by a Resolution of Parliament, or of the House of Commons. Lord Welby also declared it to be his conviction that there could be no satisfactory arrangement of these matters between India and England without arbitration, and said that he inclined to the opinion that there should be a permanent board.

Li Hung Chang's visit has included St. Petersburg, Berlin, Paris and London. At none of these capitals, the first not excepted, if his statements are to be believed, has anything in the shape of a treaty been concluded; at none has he given any of the big orders for which manufacturers were looking. In all, and in none more than in London, his reception has been warm and his demeanour flattering. The principal object of his visit to England is to obtain the consent of the British Government to the doubling of the Chinese Customs tariff, at present fixed at five per cent., and for this he seems to have made out



a strong case. Not only, owing to the great rise in the value of gold, does the customs revenue go only about half as far as it did in European payments and purchases, but Japan has been allowed to raise her tariff, and it is difficult to see what other means China has of meeting the heavy expenditure she must incur if she is to do anything effective towards setting her terribly dilapidated house in order. It is believed that the other Powers have signified their willingness to consent to the revision, no doubt at a price ; and one of the difficulties of the situation is probably to ascertain what that price is, so as to be able to extract at least a corresponding *quid pro quo*.

Though Lord Salisbury has stated from his place in the Upper House that the negotiations with the United States regarding the Venezuelan boundary are advancing favourably and with entire friendliness on both sides, they appear to have made very little progress, the chief obstacle to an agreement being the reluctance of the British Government to include territory settled by its subjects in the arbitration. Out of the dispute, however, has arisen an independent negotiation for a general arbitration treaty between the two countries, and there seems to be a fair prospect that this will end in an agreement, though, at present the parties, besides differing on minor points, are unable to agree as to the plan to be adopted for the exclusion of matters held by either Power to involve its honor or integrity, Lord Salisbury proposing that "any difference which, in the judgment of either Power materially affects its honour or the integrity of its territory, shall not be referred to arbitration . . . except by special agreement," and Mr. Olney proposing to make the arbitration unlimited unless either Power, by an Act of Congress or Parliament, or a Resolution, declares the matter in dispute to be a question of honour or integrity.

The debate on the Indian Budget in the House of Commons, which was even more perfunctory than usual, took place on the 13th ultimo. Lord George Hamilton, in the course of his speech, defended the recent re-adjustment of the Cotton duties, which, he contended, had placed the Indian and Lancashire industries on an equal footing. Referring to the railway policy of the Government, he admitted that its piece-meal character was unfavourable to progress, and expressed his opinion that the annual conference of railway officials which it was proposed to hold, would tend greatly to remedy the defect. In the course of his statement he took the opportunity of administering what was generally interpreted as a rebuff to Lord Wolseley, by endorsing the testimony borne sometime ago by Sir Henry Brackenbury, in the Council, to the efficiency of the Indian Army, and declaring his conviction that it was fit to go anywhere and meet any troops in the world.

A motion by Sir W. Wedderburn, for the annual appointment

by Parliament of a select committee for the examination of Indian accounts, was rejected by a majority of 110 to 30.

The results of the electoral campaign in the United States seem so far to point to the triumph of the Republican party, who have chosen Mr. M'Kinley as their candidate, on a sound-money and protectionist platform, the election of Mr. Bryan, a comparatively unknown man, of populist sympathies, and a pronounced silverite, by the convention at Chicago having produced a disruption of the Democrat party. Mr. Bryan's pronouncement in favour of free coinage is loudly condemned by the more moderate Bimetallists, who fully recognise the futility of any attempt to rehabilitate silver that does not rest on international agreement; and the action of the Chicago convention is regarded as a serious blow to their cause.

Parliament was prorogued on the 14th August. The Queen, in her speech, said:—"My relations with foreign Powers continue friendly. The hostile movements of the Dervishes on the Nile and against the Italian positions in Abyssinia convinced me that it was necessary that the Egyptian Government should arrest their advance, and by my advice and sanction an expedition was undertaken to restore to Egypt her lost territory as far as Dongola. A considerable portion has already been recovered by a short but brilliant action fought at Ferket. The condition of some portions of Turkey, and especially of Crete, continues to cause me much anxiety, and, while observing strict neutrality, I have endeavoured, conjointly with the Powers, to effect a reconciliation by proposing to establish a system of government acceptable alike to Christians and Mussulmans."

The Queen then trusts that the Matabele will accept her clemency; refers to the delimitation agreements with the Ameer and the Shah, and adds that friendly relations are maintained with the tribes on the road to Chitral.

The Bills passed during the Session include the Irish Land, Agricultural Land Ratings, Uganda Railway, Light Railways, Locomotives on Highways, Housing of the Working Classes (Scotland), Conciliation, Coal Mines Regulation, Diseases of Animals and Divorce Act Amendment Bills, and a number of minor measures. The Irish Land Bill has been passed in a form in which it satisfies neither the landlords nor the extreme Irish party, but is generally accepted by moderate men as preferable to the dead-lock, or, not improbably, the political confusion, that would have ensued had the Government shown a less opportunist temper. By their wholesale rejection of the amendments brought forward in the interest of the landlords, the Government, however, in view of the assurances they had given on the subject, have exposed themselves to a charge of something like breach of faith. The Bill met with



much opposition in the House of Lords, where several amendments in the interest of the landlords were carried against the Government, but the re-amendments of the Commons were accepted on the representation of Lord Salisbury that would compel the Government to reconsider their position.

Owing to the persistent obstruction of the opposition, nearly a thousand amendments being threatened, the Government were compelled to choose between withdrawing the Education Bill and abandoning their Irish legislation, and they wisely adopted the former course, announcing, at the same time, that a Bill on similar lines would be introduced in the early part of next Session, with special reference to the requirements of voluntary schools. The introduction of so complicated a measure, while the more urgent Irish Land Bill was undisposed of, is generally considered to have been a tactical blunder. The London University Bill was also abandoned at the last moment. The Deceased Wife's Sister Bill, introduced in the House of Lords, was passed there by a majority of 38, but has not been dealt with by the House of Commons.

The rebellion in Crete, which has attained serious dimensions, has furnished occasion for a fresh outbreak of anti-British feeling in Germany, owing to the British Government having declined to accede to a proposal made by Austro-Hungary for a joint blockade of the Island by the Powers with the view of preventing the landing of armed bands from Greece. The proposal, however, was opposed by Turkey, and coldly received by Russia and France, so that the result is rather a triumph for British diplomacy than otherwise. The Powers subsequently agreed to a scheme of reform for the protection of the Christian population of the Island, which the Porte, it is understood, is prepared to accept with certain modifications.

The sudden death of the Sultan of Zanzibar has furnished occasion for one of those displays of vigour and promptitude on the part of England which are generally reserved for small offenders. One Khalid, of the nature of whose claims we are unaware, having usurped the succession and occupied the palace with an armed force, variously stated to have been 700 and 2,000 strong, twelve hours' notice was given him to surrender, under pain of a bombardment by the British gun-boats assembled in the harbour. The usurper proving contumacious, the threat was punctually carried out, with the result that Khalid fled to the German Consulate and the palace was reduced to ruins. The loss of the enemy is said to have been heavy, that on our side being confined to one petty officer wounded.

An extraordinary outrage, and one which may possibly lead to very serious consequences, is reported from Constantinople, where a band of forty Armenians attacked and seized the Ottoman Bank. Ultimately, after firing and throwing

bombs upon persons in the streets, who are declared by the Porte to have been harmless passers by, they were induced to surrender to Sir Edgar Vicent, the Governor of the Bank, who was allowed to convey them in his yacht to Gulnare. They declare the object of their mad escapade to have been to demonstrate against the desertion of the Armenians by the Powers. The outrage was the signal for renewed massacres of Armenians in the capital, which have found the subject of a vigorous protest on the part of the Powers.

Among minor events of the Quarter have been the safe return of Dr. Nansen, who was found in Franz Joseph Land by the Harmsworth Expedition, followed by that of the *Fram*, which he had left some time previously, after having reached Lat.  $86^{\circ}15'$ ; the marriage of the Princess Maude of Wales to Prince Charles of Denmark, and the meeting of the International Socialist and Trades ; Unions Congress in London, which was attended by a succession of violent scenes and general confusion.

In India the period under review has been unmarked by any public events of much moment. The work done by the Council at Simla has been of little more than a formal character. Two Bills of some general interest have, however, been introduced,—one to provide for the segregation of lepers in certain cares, on similar lines to those followed in the recent Bill for Bengal, and the other to enable the Government to realise the customs' duty on goods received from without by post. The only business of importance transacted by the Bengal Council, beyond the answering of numerous interpellations, many of them of a very trivial character, has been the passing of the Municipalities Bill, which has, in several respects, been much improved by the Select Committee.

The Commission appointed to enquire into the best means of improving the labour supply in Bengal, with special reference to the needs of the coal-mining and tea-planting industries, and the system of recruitment, have submitted their Report. They have come to the conclusion that a Central Agency for the supply of labour for both industries in common is beset with insuperable difficulties, and that, even for tea alone, such an Agency is impracticable in the absence of a common understanding among employers of which there seems to be no immediate prospect. They, however, recommend that a Central Agency for the supply of labourers to the Bengal Coal-fields be established at Benares, and that Government should assist the work by circulating, through the district officials, information regarding the wants of employers and the terms offered by them, and in various other ways. They further recommend that agreements for one year should be taken from immigrants, but consider that no law, beyond the Indian Penal Code and



Act XIII of 1859, is at present needed. As regards labour for the tea districts, they recommend, among other things, that Act I of 1882 should be cancelled as far as the districts of Sylhet and Cachar are concerned, certain additions being made to Act XIII of 1859; that the Free Contractors system should be prohibited; that all persons concerned in recruiting should be required to take out licenses, and that a system of initial registration should be introduced in the recruiting districts and a Superintendent of Emigration posted in them.

The new three per cent. Government loan for four crores of rupees was taken up at an average rate of a little over Rs. 103, the minimum rate at which tenders were accepted being Rs. 102, 9 annas, and the total amount to be received Rs. 4,12,46,888. The aggregate amount of the tenders slightly exceeded twelve crores.

The scheme of the Port Commissioners of Calcutta for the discharging of import cargo at the jetties and the loading of export cargo at the Kidderpore Docks, having been sanctioned by the Government, is to be put in force in March next.

Mr. Francis William Maclean, Q.C., a Master in Lunacy, has been appointed to the office of Chief Justice of Bengal, in succession to Sir Comer Petheram, who has been compelled to retire by ill-health, and General Sir Baker Russell to the Bengal Command, in succession to General Sir W. Ellis, who died of cholera at Naini Tal on the 5th August.

Besides the names of Sir William Ellis and Sir James Browne, K.C.S.I., C.B., Agent to the Governor-General in Baluchistan, who died at Quetta on the 13th June, the obituary of the Quarter includes those of Lady Tennyson, widow of the poet, Mrs. Harriet Beecher Stowe, Sir John Millais, Sir William Grove, M. Jules Simon, Edmond de Goncourt, Ernest Rossi, Sir George Webb Dasent, Sir T. G. Logan, General S. F. Macmullen, Major-General J. S. Trevor, Sir Joseph Prestwich, Sir Augustus Harris, Sir John Pender, Sir Augustus Paget, Ernst Curtius, the Duc de Nemours, General T. G. Kennedy, Colonel Robert Home, Sir H. P. Anderson, Sir H. B. Lumsden, Major-General H. T. Tucker, Major-General F. B. G. D'Aguilar, General A. Tisdall, the Earl of Limerick, General Walton, Mr. Henry Dunckley, Mr. Charles Dickens, son of the Novelist, Nawab Sir Abdul Ganni Miah, Surgeon Lieutenant-Colonel J. F. P. M'Connell, and Mr. W. H. Targett.

*September 5, 1896.*

J. W. F.

## SUMMARY OF ANNUAL REPORTS.

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*Report on the Administration of the N.-W. Provinces and Oudh for the year ending 31st March, 1895.* Allahabad: Printed at the North-Western Provinces and Oudh Government Press, 1896.

A BRIEF SUMMARY of the year's administrative results shows as follows:—

Harvests were inferior to those of the preceding year, owing to untimely and abnormally heavy rainfall, especially during the month of October. The public health also suffered from the same cause, cholera and malarial fever being very prevalent, notably in the Sub-Himalayan districts. There was also much disease among cattle, success in treatment of which has not yet been attained. Food grain prices were, however, even lower than in 1893-94, which is perhaps one of the most important points to be considered.

The Native States of Rampur and Teuri appear to have been satisfactorily and profitably governed and administered.

The condition of Provincial Finance does not at first sight appear quite as flourishing as it might be, the budget estimates providing for expenditure exceeding expected receipts by Rs. 8,66,000, which sum is, however, provided for out of the Provincial balance of Rs. 45,24,000. A special contribution of 5 lakhs of rupees had to be made to the Imperial Exchequer, which probably disturbed the financial equilibrium; other causes also existed for enhanced expenditure, bad harvests necessitating remissions of revenue and causing decline in the sale of court-fee stamps; increase in exchange compensation allowances, growth of superannuation payments, progress in re-organisation of Police force and a larger number of prisoners received in the Jails, all tend to swell the debit side of the account and are charges which are not likely to diminish. The closing balances of Provincial and Local Funds were Rs. 30,45,000 and Rs. 10,68,000 respectively.

Public Works Establishments cost Rs. 59,000 more than in the preceding year, while Rs. 2,44,770 less was spent on Buildings and Roads. Canals added Rs. 1,68,705 to their total capital outlay, but cost Rs. 68,161 less for working expenses, while 168 additional miles of new channels were opened during the year, the total mileage now amounting to 11,060 miles; net revenue of canals is now 5·12 on capital outlay. The



total receipts on all productive works exceeded working expenses by Rs. 1,36,64,105, and those on Minor Works by Rs. 18,07,064.

Land Revenue is in a satisfactory condition, there being only Rs. 20,266 of outstanding arrears, while 9 districts in Oudh and 16 in the N.W. P. shew clear balance sheets. Arboriculture progresses satisfactorily, but Sericulture has not yet proved a success, and the experiment will be continued only on a very limited scale. Results of Horse-breeding operations are not particularised, but the idea of a Provincial Veterinary College has been abandoned.

Under the heading of Excise, the sale of country liquor is responsible for the major portion of the increase of 5 per cent., but other sources of Separate Revenue, such as Hemp drugs, Opium, Stamps and Income Tax exhibit some falling off.

The "Reserved" Forests were added to by only 3 square miles, but an addition of a large area in the hills of the Kumaon District increased that of "protected" forests to 9,319 square miles; the work of settlement and demarcation is steadily pushed forward. Financially, forests have brought in Rs. 16,402, addition to the surplus, receipts having increased in larger ratio than expenditure.

Education shows a marked falling off and is evidently not much sought after; although 15 more schools were opened the percentage of attendance in them from among the total number of children of school-going age was but 7.58 of males and .36 of females, in contrast with 19.84 and 1.97, respectively, for the whole of India. It is satisfactory, however, to learn that Mahomedans are availing themselves more largely of education than Hindus.

Vital Statistics show the year under report to have been the most unhealthy, as 1893-94 was the healthiest on record, the death-rate rising from 24.10 to 42.51 per mille, and that of births declining from 40.95 to 39.70, infant mortality especially showing an increase of 32.3 over the average for the past decade; the percentages were more unfavourable among the urban than among the rural population. Cholera was responsible for 178,079 deaths, or 8 per cent, while 75 per cent. were put down to fever, that convenient classification for all ailments beyond the villager's skill at diagnosis.

Large schemes for water-supply were completed at Cawnpore and Lucknow and sanctioned for Meerut; other sanitary measures made much progress. The proportion of successful vaccination cases has slightly increased, while the mortality from small-pox, .09, was the smallest ever recorded. Hospital accommodation has been increased, and the year closes with a balance of Rs. 1,97,685 for further progress in this direction.

The year under report has been one of general commercial prosperity throughout the Province.

Municipalities, Police, Justice, both Civil and Criminal, and Jails will be treated separately when reviewing the Reports on these subjects.

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*Report on the Administration of the Andaman and Nicobar Islands and the Penal Settlements of Port Blair and the Nicobars for 1894-95.* Calcutta : Office of the Superintendent of Government Printing, India, 1895.

THE primary desiderata in a convict settlement, being opportunity of safe custody and a reasonably healthy climate, would, judging from the Report now lying before us, appear to have been secured in the Andaman Islands; for, out of a total criminal population resident therein numbering, at the close of the year under review, *i. e.*, on 31st March 1895, 10,427, there were only 40 escapes reported, of which 25 resulted in recapture, and the balance 15 have probably failed, as the neighbouring aboriginal inhabitants, notably the Jarawas, are apparently deadly hostile to all human beings save that of their own clan: 82 convicts are entered as remaining uncaptured from those who had escaped in previous years, and these have probably met with a similar fate, as there is no record made of any of the runaways having reached their homes in India. The death-rate also is exceedingly low, that calculated for the Calendar year 1894 being but 2·66, while the table on page 35 shows 238 'releases,' of convicts who had served periods of from 17 to 30 years' of transportation or imprisonment, proving that there "expectation of life" is at least as favourable as amongst the free population.

Among so large a number of criminals who have all been incarcerated for heinous crimes, it is a matter of much interest to trace out to what extent a natural tendency to crime is found to exist. We find, then, that 14 cases of murder and attempt to murder were tried by the Sessions Court during the 12 months, in which 19 persons were concerned, of whom 8 were executed, 1 transported for life (afterwards commuted to 5 years' penal servitude) and 10 acquitted. The murderous instinct had evidently not been altogether extinguished. As to ordinary offences committed in jail against regulations, &c., &c., there were only 16·16, against 20·68 during the previous year, which is perhaps a smaller ratio than that obtaining in the ordinary Indian Jail.

The conduct of the Military Police appears to have been excellent. Doubt is thrown on the correctness of the returns by the Chief Commissioner, somewhat invidiously it would



appear, as the only valid reason he adduces is that a high state of discipline cannot be maintained at so small a cost in punishment. The strength of the force is, of all grades, 642.77 per cent. being recruited from the Panjab, *viz.*, Sikhs 46 and Panjabi Mahomedans and Hindus 21 and 9 respectively.

The Military guard stationed on the Islands consists of 3 Officers and 140 Non-commissioned Officers and men, British, and 3 European Officers with 5 Native Officers, and 278 Non-commissioned Officers and men of a Native Regiment.

A very large portion of the Report is taken up with details of commercial operations regarding agriculture, timber and other cultivation, and is not of much general interest; a brief notice will suffice as regards the financial condition of the Administration. There has been a net increase in expenditure of Rs. 2,13,308 over that for the year 1893-94, which is more than accounted for by the compiler of the Report, with the items, "Construction of Cellular Jail," Rs. 39,798; "Tramway for Jail," Rs. 12,962, and Falling off in Forest Revenue, Rs. 2,05,482: total, Rs. 2,58,242. The two first-named items are plainly not of annual occurrence, but the third and major one must always constitute a floating factor, such events as falling prices of timber in the London market, diminished demand in the Settlement itself, &c., with consequent holding up of stocks—the chief causes complained of—must always be possibilities, and such sources of revenue cannot be treated as certainties without risk of upsettal of financial calculations. The compiler of the Report cannot be congratulated on the clearness and conciseness of his production. There probably is a fund of information contained in it, but the extraction and classification thereof would be a work of much time and labour.

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*Administration Report on the Jails of the Panjab for the year 1895.* By Surgeon Lieutenant-Colonel T. E. L. BATE, Inspector General of Jails, Panjab. Lahore: The Civil and Military Gazette Press, 1896.

**B**EFORE discussing the purely statistical portions of the Report under review, we would wish to express our appreciation of the manner in which the various points have been placed before the reader. All verbiage and circumlocution have been carefully eliminated; each of the 91 paras into which the Report has been condensed is concise, clearly expressed and to the point; facts and figures are easily got at, and their interest and utility are thereby much enhanced.

Omitting Chapter I, "Judicial Statistics," the matter contained in which may be dealt with more appropriately when reviewing the "Criminal Administration of the Province,"

we pass on at once to particulars more strictly pertaining to results of jail management during the year.

While the authorities may be congratulated on the insignificant number of escapes effected during 1895, *viz.*, nine intra-mural and a like number extra-mural, we entirely concur with Surgeon Lieutenant-Colonel Bate in his demand that the initial proceeding should be made, as far as *mechanical* means will admit, impossible. This is but common justice to those in immediate responsibility. Bribery and carelessness are factors not always controllable, but stone and iron can be relied on and should be utilised to the utmost extent. Offences committed by members of the jail establishments under the heading "Criminal" are only 6 per cent. on the total number of individuals employed: "Departmental" offences show the large total of 2,573, but some of these appear to be of a particularly trivial nature, such as "being without uniform or not falling into 'present arms' to Superintendent," 24; "allowing prisoners to make a noise," 26; "backward in drill," 18; "dirty arms, accoutrements or clothing," 22. Punishment in cases such as these can be necessary only, as the Inspector General phrases it, with a view to the establishment of a high state of discipline.

The total number of offences committed by convicts while undergoing their respective sentences would, at first sight, appear a very large one, but analysis shows that only 117 of them were of a really serious nature, *i. e.*, "assaults, mutiny, and escape." "Relating to work" is responsible for 24,321, and "Prohibited articles," for 2,733. A preternatural zest for, to themselves, profitless labour, or a sudden distaste for tobacco is an unlikely outcome of rigorous imprisonment, nor are such proclivities apparently fostered by its continuance, for we find from a table appended to para. 43, that "Habituals" receive 0·46 of the punishments thus inflicted, albeit they form but 12 per cent. of the jail population.

The death-rate for the year is a satisfactorily low one, contrasting favourably with that of the free population, being 21·80 compared with 29·29, and influenza is, probably with justice, held responsible for an increase of 3 per cent. over 1894; this latter year was, however, an exceptionally healthy one. During the remaining 18 out of the 20 preceding years, the percentages ranged from a maximum of 140·10 in 1879, to a minimum of 26·60, in 1893.

Jails cannot well be expected to bring in a profit, or even to pay their own expenses, but it appears that more might be done in this direction. "Actual earnings," Rs. 1,31,500, on an expenditure of Rs. 6,92,772, yields only 18 per cent., and this in face of the fact that all paper manufactured and litho-



graphic printing done (the two principal industries) are at once taken over and credited by the Local Government.

*Report on the Land Revenue Administration of the Punjab for the Agricultural year 1st October 1894 to 30th September 1895.* Lahore ; The "Civil and Military Gazette" Press, 1896.

THE rainfall during the twelve months under consideration is aptly described as copious, but capricious. But, taking an average of the entire area actually cultivated, the season would appear to have been, on the whole, fairly favourable, though a trifle below the average. There was no actual deficiency in rain.

Cotton, in particular, appears to have yielded the best crop grown in a period of ten years, although it too suffered to some extent from rain irregularity. As a proof that the season was slightly deficient, we find that, of the cultivated area, 90·6 bore at least one crop during the year, whereas the average is 91·3, and last year the figure stood at 96·9 ; but the percentages for ten years, with a maximum of 99·7 and a minimum of 83, show that fluctuation is the rule.

*Irrigation* shows a large decrease in area supplied, *viz.*, 352,747 acres less than in 1893-94 : this was due to the unusually heavy rainfall before the "Rabi" sowing time, in the Delhi division during November, and throughout the Province in December, rendering irrigation unnecessary. The "Rabi" crop was, as usual, the most valuable one to the agriculturist.

*Wheat*, as usual, formed the major crop raised, being 65·7 of the irrigated "Rabi" harvest, and 54·8 of all gathered in at that season, and *wheat* was exported to the amount of 527,120 tons, being nearly double the average shipment. This is the largest total save one ever exported, the exception being in 1891-92, when it reached 535,473 tons ; only on these two occasions has the quantity sent away exceeded the half million. The value of the above export, calculated on an average of the prices ruling during the last quarter of the year, was Rs. 2,89,32,268, which alone sufficed to pay the land revenue, Rs. 26,69,262, and leave a balance of Rs. 22,38,636. Twenty-two per cent. of the entire crop was exported ; causing, according to the Financial Commissioner's calculation, a rise of 11·6 in the market price of the produce.

The exports of oilseeds were below those of last year, but above the average of the last eight years.

The area of cultivable land mortgaged by proprietors appears to have increased by eight per cent. during the twelve months under review, but the correctness of the returns is impugned, owing to the somewhat doubtful figures received from Dera

Ghazi Khan, from which it would appear that that district contained over six per cent. of the total mortgaged area of the Province, a fact which seems improbable if not impossible.

Locusts appear to have done no harm to the crops, and the plague of field rats is reported to have died out.

Extension of Record room accommodation is in general demand, but funds are insufficient for appreciable improvement in this respect. As a whole, the financial condition of the Province, as far as revenue from land is concerned, may be said to be extremely prosperous: the output was somewhat less than in the year 1883 84, but, with this sole exception, the last three harvests in succession have been the most favourable on record.

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*Report on Municipal Taxation and Expenditure in the North-Western Provinces and Oudh during the year ending 31st March 1895.* Allahabad: North-Western Provinces and Oudh Government Press, 1896.

THE official element still strongly predominates in the constitution of Municipal Boards, as will be seen from the following facts:—In six municipalities, the District Magistrate is *ex officio* Chairman; in ninety others he has been voted to that post, and in the case of ten the Tehsildar has been elected. In Fyzabad alone there is, and has been for some time past, a non-official Chairman, but in all other cases the Boards at district head-quarters are officially presided over, while, of the total number of members throughout the province, twenty-one per cent. take their seats as either *ex officio* or "nominated," nineteen per cent. are classed as officials and eleven per cent. are Europeans. Direct taxation has, as a general rule, proved insufficient in result as well as being difficult of realisation; Octroi therefore furnishes the bulk of reliable income; in eighty-three out of one hundred and three municipalities this form of taxation is in force, and in twenty-two towns no other has been resorted to. In twenty octroi has not hitherto been levied, but with the exception of Dehra, Mussoorie and Rurki, they are places of small importance. The *gross* income realised by octroi throughout the Province, during the twelve months under review, was Rs. 35,04,556, an increase of Rs. 1,94,462 on the figures for the preceding year, the *net* total being eighty-one per cent. of all income from rates and taxes.

Incidence of taxation would appear to be distributed with considerable irregularity. While the average per head of total population within Municipal limits is Rs. 1-0-7, that for Mussoorie is Rs. 6-11-10; that for Naini Tal Rs. 5-6, and in four other instances, the average is between Re. 1-7 and 1-15.



The Boards of Benares, Cawnpore, Lucknow, Mussoorie, Allahabad, Agra and Naini Tal, spent between them Rs. 7,59,056 on water supply ; on drainage, Rs. 2,45,708 ; and on Public Works, Rs. 2,27,009 ; expenditure in other towns was chiefly of a petty nature. In Mussoorie, the amount (included in above figures) spent on water was only Rs. 9,646 ; but, the supply having proved quite inadequate, other arrangements are reported to be in progress, as also in the case of Naini Tal and Dehra.

The year under consideration was an exceptionally unhealthy one, the ratio of deaths per mille of population being 44·94 against 30·78 in the previous twelve months ; that of births, on the other hand, fell, being 37·24 against 39·13 ; the prevalence of cholera, especially in the Lucknow division, during the rains of 1894, is the only reason put forward to account for the high rate of mortality.

Education is evidently not considered of very high importance by the Boards, as it receives only 2·7 per cent. of the total revenues. His Honor the Lieutenant-Governor pleads for allocation to it of at least five per cent., and we think the demand an extremely moderate one.

As a whole, the municipalities of the province, with the exception perhaps of Benares, appear to be in a solvent and advancing condition, and the compiler of the Report is to be congratulated on the clear and lucid manner in which he has marshalled his facts and figures.

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*Annual Report on the Police Administration of the Town of Calcutta and its Suburbs for the Year 1895.* By the Hon. Sir JOHN LAMBERT, K. C. I. E., Commissioner of Police for Calcutta. Calcutta : Bengal Secretariat Press, 1896.

THE Report on the Police Administration of the Town and Suburbs of Calcutta during the year 1895 is little more than a bare analysis of Criminal Statistics. Sir John Lambert is evidently of opinion that, the less said about the work of the police under ordinary circumstances, the better ; and, no doubt, he is right. There was nothing specially noteworthy in the events of the year, the most important feature of which was an increase in the number of serious offences against person and property from 444 to 485, which is higher than the average of the preceding four years by 27. In the town, the number of cases of burglary was 134, which, though less by seven than that for 1894, exceeds the average of the preceding four years by 12 ; while the number of cases of theft rose from 1,489 in 1894 to 1,517, which is in excess of the average by 31. For the Suburbs the figures are much worse, the number of burglaries having risen from 65 to 106, though there was a slight

decrease in that of thefts. The explanation given of this increase of burglaries in the Suburbs, *viz.*, that they were due to the high rate of sickness among the police during the year, rendering a considerable proportion of the men unfit for beat duty, can scarcely be considered satisfactory to the public.

The total number of offences, cognisable and non-cognisable, in Town and Suburbs, reported during the year, was 45,291, against 41,512 in 1894; but, excluding "minor" offences, the increase was only 34; of 21,586 cognisable cases sent up by the police, convictions were obtained in 19,369, or 89 per cent, which seems an extraordinarily high proportion. The number of cases of "serious" crime was 3,614, against 3,225 in 1894, and an average of 3,327. In the Town the number of murder was 9, or the same as in 1894; but 2 of these were by poison, against nil in the latter year, and 2 of them were of native women of the town by unknown visitors. There were no cases of culpable homicide, against 4 in 1894, and there was no case of rape. In the Suburbs, there were 4 murders, or the same number as in 1894, one of them being of a girl-wife by her husband, 2 cases of culpable homicide, and 1 of rape.

We observe an extraordinary increase of cases of "kidnapping," from 20 to 31 in the Town and from 7 to 13 in the Suburbs, regarding which a little more information would have been acceptable.

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## CRITICAL NOTICES.

*Adam Johnstone's Son.* By MARION CRAWFORD. Macmillan & Co., London and New York.

MOST of Mr. Marion Crawford's admirers will, we venture to say, be glad that, in his latest book, he has torn himself away from America and returned, with his *Dramatis Personæ*, to the more classic shores of Italy, the place which has hitherto, to our mind, inspired his best work. It is in the "queer hotel, which was once a monastery, perched high up under the still higher overhanging rocks," in the beautiful, sunny little town of Amalfi, that we are introduced to the heroine and her mother, "Mrs. Bowring," who have come there in search of health and rest. Their object, as far as the latter is concerned, is, to a certain extent, frustrated by the arrival on the scene of the lady's divorced husband and his wife; their son having preceded them by some days and made himself acquainted with the widow and her daughter. The practised reader will at once foresee complications, and he will not be disappointed, though it is no part of our duty to disclose them, or the means by which they are overcome. Whatever difference of opinion there may be as to the propriety of the course adopted by the heroine, when she finds herself an unwilling eavesdropper to a lovers' quarrel; or of the device by which Sir Adam Johnstone proposes to rid his son of the attentions of an adventuress, all will admit that Mr. Crawford has told his story picturesquely and well, and that his characters, although—or perhaps we should say, because—very imperfect, are exceedingly human, especially "Clara" and "Brook Johnstone." The elders among them, if we except Mrs. Bowring, are thorough people of the world, so much so that now and again there is something almost approaching cynicism in the matter-of-fact way in which doubtful situations are accepted, and peccadilloes passed over; and it occurs to us that a wife so absolutely good-natured regarding her husband's somewhat reckless past, as Lady Johnstone, and so amiably disposed towards his former wife, must have been either more or less than woman. And in this respect hers is the least naturally drawn character presented to us. To all who are acquainted with Mr. Marion Crawford it goes without saying that the book contains some excellent dialogue, some sound philosophy, and numberless pretty little bits of descriptive writing, some of them vivid

enough to act almost as a photograph to those who know the spot described, and who that has visited Amalfi would not recognise the following: "At the western end of the old monastery there is a broad open space, between the buildings and the overhanging rocks, at the base of which there is a deep recess, almost amounting to a cave, in which stands a great black cross, planted on a pedestal of white-washed masonry. A few steps lead up to it. As the moon rose higher, the cross was in shadow, while the platform and buildings were in the full light." And how well the writer hits off the manner of those "smart" people who fancy themselves the salt of the earth, and whom, alas, we have all met—not only in Italy, but wherever English Society finds a footing—the people who try to appear unconscious of the existence of anyone not in their set, who brush past them in public places without so much as a word of apology, who refuse to make room for them when they, in their turn, wish to pass, and who, in short, make themselves as generally unpleasant as ill-bred English people know how. "They moved," he says, describing a party of such folk, "as though everything belonged to them, from the wild crests of the hills above to the calm blue water below, and the hotel servants did their best to foster this agreeable illusion."

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*Richelieu.* By RICHARD LODGE, M. A., Professor of History in the University of Glasgow, formerly Fellow and Tutor of Brasenose College, Oxford. ("Foreign Statesmen Series.") London: Macmillan and Co., Ltd. New York: Macmillan and Co. 1896.

THE Editor of the "Foreign Statesmen Series" has appropriately chosen for the subject of the first volume the man who is entitled pre-eminently to be regarded as the maker of France; and Professor Lodge has performed his task of biographer with much judgment and considerable literary skill. If the pages before us are occupied more with the history of France during one of the most critical and interesting periods of her existence than with the private life of the Great Cardinal Minister, the fault is scarcely his. No biography of Richelieu worthy of the name has ever yet been produced—perhaps never will be, for though the material is not wholly wanting, the difficulty of disentangling the man from the public affairs with which he was associated is exceptionally great—, and the writer of a work like the present is almost necessarily dependent on published materials. Perhaps he would have done wisely to work on broader lines. The most consummate artist could hardly hope, within the compass of a single small volume, to evolve a narrative



which should be at once clear and comprehensive, out of the maze of turmoil and intrigue that followed the death of Henry IV in France. The occasional glimpses which we get of the man, in his habit as he lived, are, however, both impressive and interesting, and Professor Lodge's estimate of his work and character is judicious and convincing.

Of the worst feature in Richelieu's character, he says :—

"The charge most frequently brought against Richelieu is that of cruelty and vindictiveness, and it is a charge that cannot possibly be denied. Among the victims who perished on the scaffold for opposition to his rule were five Dukes, four Counts, a Marshal of France, and the king's favourite equerry, Cinq Mars. To these must be added a number of lesser offenders who were put to death, and the many opponents, of all ranks, who were condemned to imprisonment in the Bastille, or driven into exile in foreign lands by the minister whose enmity they had incurred. But if Richelieu was pitiless, he was not, like most revengeful despots, either capricious or unjust. He did not strike the tool if he could reach the employer, nor did he strike till guilt was obvious and incontestable; his was no reckless reign of terror. His methods, though often arbitrary, and contrary to legal custom and tradition, were always fearless and above-board. Political considerations sometimes made it impossible to inflict a fitting penalty upon men who richly deserved it, such as de Bouillon and the treacherous Gaston, but the motive that allowed them to escape was never terror or a wish to curry favour. \* \* \* \* \* He was undoubtedly right from

his own point of view in acting upon the maxim of Machiavelli that 'it is safer to be feared than to be loved.' \* \* \* The element of personal resentment which seems to di-figure and condemn Richelieu's pitiless treatment of his foes, is accounted for by the sublime confidence with which he identified his own ascendancy with the welfare of the State, a confidence without which few rulers have been able to achieve really great work."

As Professor Lodge admits, it is impossible to contend that Richelieu was wholly admirable as a man; but he was probably perfectly sincere when, being asked, on his death-bed, whether he pardoned his enemies, he replied : 'Absolutely, and I pray to God to condemn me if I have had any other aim than the welfare of God and of the State.'

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*The Judge of the Four Corners.* By G. B. BURGIN. Macmillan and Co., London and New York.

IT does not require much discernment to discover that G. B. Burgin, the author of "*The Judge of the Four Corners*,"

has sat at the feet of Bret Harte, and although he is still a very long way behind his master, has managed to catch something of his style. The characters to whom he introduces us, however, are mere puppets in comparison with the life-like personages who are familiar to us all in the pages of the author of the "Luck of Roaring Camp." As for the incidents, they seem to us, for the most part, wholly wanting in *vraisemblance*, particularly the ultra-sentimental episode of the "Last Poem" and the death of "Skeeter Joe;" and the reader wearies a little of the laborious humour of "Old Man" and "Ikey," to say nothing of the vagaries of the redoubtable "Miss Wilks." The writer, however, is not wanting in descriptive power, and has, in spite of the defects referred to, produced a very readable book, which may be recommended to any one wanting to pass an idle hour.

*Old Melbourne Memories.* By ROLF BOLDREWOOD. Macmillan and Co., London and New York.

ROLF BOLDREWOOD'S "Old Melbourne Memories," which first saw the light in the columns of the *Australasian*, contains an exceedingly interesting account of the beginnings of that now beautiful city, besides a vast amount of information on sporting and other matters, interspersed with anecdotes and tales of "Moving accidents by flood and field, Of hair-breadth 'scapes," &c. The writer's reminiscences date from the year 1840, when his family migrated, with all their Lares and Penates, from Sydney, to assist in the foundation of the city, the site of which was then covered by a few cottages and one or two public-houses, but rejoiced in exceeding rich pasture-land waiting for the enterprise of men to develop its resources; and the change from a place where, among other drawbacks, drought had enfeebled the meat market, was apparently a very welcome one. "We had reached," says the writer, "a land of Goschen evidently—a land of milk and butter, if not of honey—a land of chops and steaks, of sirloins and "undercuts"—of all youthful luxuries well nigh forgotten—of late unattainable in New South Wales as Strawberry ice in a cane-brake." How the author on one occasion met with an adventure which recalls that of young "Marlowe" in "She Stoops to Conquer" had best be told in his own words:—

I left the station for Melbourne in the December following, having earned a Christmas at home. When I arrived at Geelong, I turned out early next morning, and rode to Fyans' Ford to see if I could find "tale or tidings" of the red cow left behind, as before mentioned. How honest were nearly all men in those days! I *did* hear of her, and, having discovered her whereabouts, I went to the old house to



breakfast, preparatory to riding to Heidelberg, fifty seven miles all told, that night.

Dismounting at the stable door, I gave my mare to the groom, with a brisk injunction as to a good feed, and passed into the house. In the parlour was a maid-servant laying the breakfast. I stood before the fireplace in an easy attitude, and demanded when breakfast would be ready.

"In about half an hour, sir." I noticed a slightly surprised air.

"Can't you get it a little sooner, Mary?" I said, guessing at her name with the affability of a tavern guest of fashion and substance.

"I don't know, sir," she made answer meekly.

"Come, Mary," I said, "surely you could manage something in less time? I have a long way to ride to day."

She smiled, and was about to reply, when a door opened, and a middle-aged personage, with full military whiskers, and an air of authority, looked in.

"I don't think I have the pleasure of knowing you, sir," he stated, with a certain dignity.

"No," I said; "no! I think not, Not been here since last year." (I did not particularly see the necessity either.) I was cool and cheerful, and it struck me that, for an innkeeper, he was over punctilious.

"This is no inn, sir," he said, with increased sternness.

In a moment my position flashed upon me. I then remembered I had not noticed the sign as I rode up. The house and grounds, large and extensive, had been occupied by a private family. Nothing very uncommon about that. So here had I been ordering my horse to be fed, and lecturing the parlour maid, all the while in a strange gentleman's abode.

I could not help laughing, but immediately proceeded to apologise fully and formally, at the same time pointing out that the place had been an inn when I last saw it. Hence my mistake, which I sincerely regretted. I bowed, and made for the door.

My host's visage relaxed. "Come," he said, "I see how it all happened. But you must not lose your breakfast for all that. Mrs. ——— will be ready directly, and my daughter. I trust you will give us the pleasure of your company."

Mr. Boldrewood's style is forcible and his descriptions are graphic, but we will not interfere with the enjoyment of the reader by quoting more from the book than is sufficient to indicate its merits. The impression left on the mind after laying it down will, with most persons, probably be that the life of the "Squatter," even before "the gold" was, with all its anxieties and ups and downs, its fights with nature, and with man, "after all, a great and glorious thing," possessing a fascination and excitement quite unknown to the stay-at-home, and by no means destitute of the substantial comforts, and congenial and cultured society the lack of which is supposed by many to make residence in the Colonies a dreary exile.

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*Where Highways Cross.* By J. S. FLETCHER. Macmillan & Co., London and New York.

“**W**HERE Highways Cross” is a sad little story of the growth and, ultimately, the wreck of a strong man’s first and only passion, and many of its readers will probably feel that the *denouement*, as far as the hero, Thorndyke Hepworth, is concerned, is a little cruel. He falls in love with a woman whose husband, after being convicted and sentenced to a term of imprisonment for forgery, is reported, on the best authority—that of the prison officials—to have been shot while attempting an escape, and he is on the eve of making her his wife when unlooked-for circumstances arise, which we will leave the reader to follow out for himself, suffice to say, they completely shatter Hepworth’s dreams of happiness. The scene of the story is laid in Yorkshire, and in his descriptive passages the writer sometimes reminds us of Mr. Thomas Hardy, as, for instance, when he paints the hiring fair at Sicaster:—

“The young woman who had ridden into the town with the friendly waggoner made her way along the skirt of the crowd until she came to the market-place. Here the scene was even noisier and more perplexing than in the wider corn market, for the pavement was lined with stalls at which small hucksters sold sweet stuffs and cheap commodities, and the space beyond was filled with more shows, roundabouts, and canvas booths. Here, also, the people were more crowded together and seemed to be waiting for something to happen. A row of farm labourers, some of whom carried whips in their hands, stood on the curb; a crowd of young women, dressed in their best, sheltered under the low roof of the old Butter-Cross. Farmers in stout driving coats and leggings walked about in the throng or chatted in groups at the shop-doors, while young folks and children clustered about the stalls or pushed their way to the fronts of the shows. Arrived there they stood in open-mouthed admiration of the gorgeous paintings that placarded the wonders to be seen inside.”

And again when Hepworth rides out from his home, all unconscious of coming trouble, to meet his doom:—

“Hepworth rode out of the narrow lane leading from the farmstead to the high road, and began to whistle merrily as his horse struck into a canter. It was high summer, and the morning was full of lusty life. The long stretch of flat country to the eastward lay wrapped in dreamy mist that was even then slowly melting before the hot sunlight. Far away across the beach land, towering high above the mist that wrapped their feet, rose the Wolds, a faint line of deep blue colour against the lighter tints of the sky beyond. In the foreground lay red roofed farmsteads, thick woods newly clothed with fresh green, with the spires and towers of many a quiet village peeping above the belts of elms and beech that fenced them in. Hepworth saw the picture and thanked God for its loveliness. It was in accord with his mood. That day, he thought, must needs be a day of sunlight and gladness, for it was the day before his wedding.



The characters are few and very human, the story is pleasantly and forcibly told, and Mr. Fletcher's English is generally so good that we are sorry to have to make one criticism. But we cannot pass such a blemish as the word "folks," which, we would point out to the writer, although it may figure prominently in the so-called literature of the day, and notably on the title page of certain magazines for the young, whose editors should know better, has no place in any dictionary with which we are acquainted, and is not only inelegant, but absolutely incorrect.

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*A Bride Elect.* By THEO. DOUGLAS. Macmillan & Co., London and New York.

LOVERS of the occult and the marvellous will probably appreciate "A Bride Elect," which deals with the mysterious disappearance of a girl on the very eve of her wedding. Sent by her father on an errand, to his study, she never returns, and in spite of all that can be accomplished by detective skill and private effort, her whereabouts remains a secret to her family and to the reader, till the closing chapters of the book are reached, when the mystery is solved in a manner which we will not disclose. On the possibility of the story we will not venture an opinion; it is a question that can safely be left to the Psychical Society to determine, but there are improbabilities in it that will doubtless strike the critical reader. None of the characters seem to us very convincing. Of Barbara, the Bride, we see very little, and from that little judge her to have been a somewhat selfish and worldly young lady, while her foil, "Janie Moorhouse," is so shrinking and lacking in self-assertion as to appear to us, as she did apparently to most of her companions, an insignificant girl of no particular account—one of those persons who seem born to be placed in the back-ground; and, in marrying her cousin's bridegroom elect, as soon as it was discovered that the former was dead, she seems somehow to disturb the harmony of our impressions regarding her. "Dick Sudeleigh," the bereaved lover, strikes us as a somewhat half-hearted individual, who was ready to feel tenderly towards both the girls, and, when deprived of the one, quite content to settle down with the other—a very comfortable and convenient disposition, no doubt, but not one calculated to excite enthusiasm. The mysterious Mr. Redworth is, perhaps, the most powerful character in the book, as he is also the most unpleasant.

The story is written in the first person by one Susan Varney, the godmother of the ill-fated Barbara, and there is nothing in its style to raise it above the commonplace.

*His Honor and a Lady.* By SARA JEANNETTE DUNCAN (Mrs. Everard Cotes). Illustrated by A. D. M'Cormick (Macmillan's Colonial Library). London : Macmillan and Co., Ltd. New York : Macmillan and Co.

THOUGH the story is slight, and, perhaps, a little wanting in vital interest for the world at large, *His Honor and a Lady*, whether in the constructive skill, the descriptive power, and the fidelity to life displayed in it, or in the minor details of literary workmanship, marks an immense advance on the writer's previous efforts.

In its pages the new photography has been brought, with startling effect, to bear on certain familiar, if not in every instance typical, components of the strange aggregate which calls itself society in Calcutta, and which, amid recurrent ebb and flow and ceaseless unitary flux, preserves a sameness of general feature that, to use a phrase of the author's, "nothing short of the reconstruction of the Indian Empire" could change.

The story opens with the somewhat unexpected appointment of John Church, Commissioner of Hassimabad, to act as Lieutenant-Governor of Bengal, during the absence of Sir Griffith Spence on sick leave. John Church is a man with strong ideas of duty and "the invincible courage of short-sightedness" in carrying them out—a "compound of petty virtues," who regards all things from a moral standpoint. Eight years before, in England, he had married a wife of half his age, who had accepted him a little, it may be suspected, for the sake of the position, but more "for the sake of her imagination," to which the East presented itself as a "vision of palms and pomegranates" and fascinating mystery. Cultured, impressionable, walking blamelessly as the world goes, she finds her ideals incompletely satisfied either by John Church or by her immediate surroundings, and is pardonably intoxicated with the prospect of "something to assume and carry out, a part to play with all India looking on." Among the other appanages of his new office, John Church takes over, as Chief Secretary, Mr. Ancram, a man whom one of the critics has aptly described as "a study in disloyalty"—cynical, soulless, cold-blooded, a worshipper of expediency and—himself, and, to anticipate, destined to become "His Honor" of the title as we read it. He is engaged to Rhoda Daye, who has taken his fancy mainly, it would seem, because she is unlike the other "young ladies in straw-hats and cambric blouses" who appear annually in the cold weather. Rhoda Daye seems to have puzzled some of the critics. To us the least intelligible thing about her is that she ever engaged herself to Ancram. But then, as she tells him in the end, she had accepted her idea



of him, "which was not altogether an accurate one." He himself, when Mrs. Church had appeared on the scene, and he had begun to see Rhoda Daye with other eyes, had once assented to that lady's description of her as "a little marble image, with a very pretty "polish" and added that he had "got to marry her." As we read her character, barring a certain flippancy which jars, she is an altogether admirable girl—clever, watchful, penetrating, warm-hearted at bottom, but thoroughly mistress of herself, and resolutely determined to marry no one whom she cannot love and respect, and on whose love and respect she does not feel that she can confidently reckon. At all events, she comes pretty quickly to see through Ancram, and takes the opportunity of a garden-party, given specially in their honour, to dismiss him, with no more ceremony than he deserves.

"They took another of the wide solitary paths that led "under showery bamboos and quivering mahogany trees to "where a stretch of water gave back the silence of the palms "against the evening sky, and he dropped unconsciously into "the stroll which is characterised everywhere as a lover's. She "glanced at him once or twice corroboratively, and said to "herself that she had not been mistaken: he had real dis- "tinction—he was not of the herd. Then she picked up "broad, crisp leaves with the point of her parasol, and pon- "dered while he talked of a possible walking-tour in the "Tyrol. Presently she broke in irrelevantly, hurriedly—

" 'I like to do a definite thing in a definite way; don't you?'

" 'Certainly; yes, of course.'

" 'Well; and that is why I waited till this afternoon to tell you—to tell you—'

" 'To tell me—'

" 'My dear Mr. Ancram, that I cannot possibly marry you.'

Ancram finds consolation in wresting from Mrs. Church, and Rhoda Daye confirmation of her distrust of him in over-hearing, a confession that she loves him. A little later, Rhoda Daye accepts Philip Doyle, a leading Calcutta barrister, erst-while Ancram's "chum" and bosom friend, and a man of sterling worth and independence.

In the meanwhile John Church's political morality has raised a storm in Bengal. His particular hobby is the withdrawal of State aid from education, at all events from the "higher culture," and its transfer to technical schools.

"If he insists on putting this University foolishness of his through," Philip Doyle had said, discussing the matter with Ancram over their wine, "I'm sorry for him. He's a dead man politically, the day it is announced;" and Ancram had agreed with him emphatically.

John Church does insist on putting it through ; the agitation, in which the Missionaries take the native side, extends to England ; questions are asked in the House, where a great impression is made by a certain extremely graphic and able article, criticising the acting Lieutenant-Governor's policy in scathing terms, in the *Bengal Free Press*, and he is politically a dead man. The Secretary of State has, in fact, written to the Viceroy, asking him to arrange his retirement. The news reaches John Church when he is inspecting one of the most pestilential towns in Bengal ; and he is struck down by cholera the same evening, and dies at dawn.

Mrs. Church sails at once for England. Rhoda Daye and Doyle are married in due course ; and, Sir Griffith Spence retiring, Ancram becomes Lieutenant-Governor of Bengal.

Not long after, Ancram takes three months' leave on urgent private affairs, and starts for England, with the full intention of making Mrs. Church his wife. But fate intervenes to save her. When the agitation against John Church was at its height, Doyle had come into possession of incontestable proof that the famous article in the *Bengal Free Press* had been written by Ancram. He had kept the secret ; but the proof, in the shape of a letter from Ancram himself, and, with it, a copy of the paper containing the article, lay forgotten in the pocket of one of his coats. Doyle is in business correspondence with Mrs. Church ; and, owing to an accident in his office to which Mrs. Doyle is unwittingly contributory, the same steamer that carries Ancram to Europe also carries a cover to Mrs. Church's address, in which, along with other papers, the damning documents are enclosed.

Mrs. Church is awaiting Ancram's arrival, in a fever of expectation, when the incriminating packet is put into her hands ; and a few hours after Ancram himself is announced. What passes between him and Mrs. Church during the interview that follows, the reader must find out from the book.

"One day, a year later, Sir Lewis Ancram paused in his successful conduct of the affairs of Bengal long enough to state the case with ultimate emphasis to a confidentially enquiring friend.

'As the wife of my late honoured Chief,' he said, 'I have the highest admiration and respect for Mrs. Church ; but the world is wrong in thinking that I have ever made her a proposal of marriage ; nor have I the slightest intention of doing so.' "

The story is not ineffective as far as it goes ; but the special merit of the book lies in the keenness of the satire which pervades it ; the cleverness and vivacity of the dialogue ; the firmness of touch with which the principal characters are drawn ;



the unerring skill with which, often in a single incisive phrase, ignoble motives are laid bare, and the insight which the writer shows into certain of the less amiable phases of Indian political and social life. Last not least, its pages are interspersed with admirable little bits of description, impressionist, no doubt, for the most part, but always vivid and true to nature, and occasionally, like the following, full of clear-cut detail:—

“It was only half-past four, and the sun was still making strong lines with the tawdry flat-roofed yellow shops that huddled along the crowded interminable streets. She looked out and saw a hundred gold-bellied wasps hovering over a tray of glistening sweetmeats. Next door a woman, with her red cloth pulled over her head, and her naked brown baby on her hip, paused and bought a measure of parched corn from a bunnia, who lolled among his grain heaps, a fat invitation to hunger. Then came the square dark hole of Abdul Rahman, where he sat in his spectacles and sewed, with his long lean legs crossed in front of him, and half-a-dozen red-beaked love-birds in a wicker cage to keep him company. And then the establishment of Sadda Nath Mookerjee, announcing in a dazzling fringe of black letters:

‘PAINS, FEVER AND DISEASES CURED WHILE YOU WAIT.’ ”

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*Observations on Epidemics of Cholera in India, with special reference to their immediate connection with Pilgrimages.* By CHARLES BANKS, M. D., Glas., Civil Medical Officer, Puri-Jagannath, Orissa, India.

THE observations on cholera epidemics contained in this pamphlet embody the results of a particularly painstaking study of the history of three epidemics of the disease by which the town of Puri and its neighbourhood were visited in the years 1893 and 1894.

The general conclusions drawn by Dr. Banks from the facts are:—

- “1. That pilgrimages and human intercommunication generally are most powerful factors in the dissemination of cholera.
2. That pilgrimages and cholera are almost inseparably connected, and that the disease confines itself for the most part to pilgrim routes.
3. That water is, undoubtedly, the chief vehicle through which the germs of the disease are introduced into the human system.
4. That the disease, if at all communicable through the atmosphere, can only be so communicated to an

almost inappreciable extent, judging from the fact that the atmosphere, in badly ventilated sheds and hospitals, overcrowded with patients during epidemics in Puri, has been excessively vitiated, and yet has not been sufficient to cause a general outbreak amongst attendants on the sick.

5. That, when attendants on the sick are attacked, the unfortunate occurrence must be ascribed to negligence with regard to cleanliness and disinfection of the hands before partaking of food.
6. That the dissemination of the disease can be prevented by suitable precautions.
7. That the period of incubation is, in the majority of cases, probably in all, well under three days from the actual time of ingesting the virus.
8. That quarantine, during pilgrimages, is impracticable and dangerous; but that isolation is one of the most important preventive measures.
9. And, lastly, that the disease, in its incipient stage, is amenable to treatment in most instances."

By the second of these conclusions, the writer probably means no more than that the conditions under which Indian pilgrims generally travel, are lodged, and eat and drink, are so favourable to their contracting the disease as to make it in a high degree probable that, when their numbers are large, some of them will be attacked by it, and that neglect of precautions for preventing the spread of the disease in the case of such persons is so general, as to make it in a high degree probable that when cases of it occur, under the circumstances in question, it will be disseminated in the neighbourhood of their occurrence.

Thus qualified, the truth of the conclusion will, we think, be generally admitted; but, as it stands, the latter part of it seems to us to be stated somewhat too strongly. In another part of the pamphlet, Dr. Banks observes: "I do not deny that outbreaks of cholera may occur simultaneously, and at a considerable distance from pilgrim routes, but I venture to believe, if it were possible to investigate all such occurrences during pilgrim seasons, it would be found *in the great majority of instances* that the primary cause was the arrival of pilgrims affected with the disease, or a member of the district community arriving in his native village already suffering, or who had been exposed to the disease prevailing amongst the pilgrims along pilgrim routes, and attacked on his arrival."

The rest of the writer's conclusions are in accord with the deductions drawn by the most competent observers from experience elsewhere. The evidence presented in favour of 4, 5, 6



and 7 is very strong. At the same time it should be noted, Dr. Banks, in discussing the etiology of the disease, while emphasising the contagious properties of choleraic discharges and the dominant part played by water and food in the introduction of the poison into the system, says "it cannot be denied that cases occasionally crop up in which it is difficult to believe that any specific virus could have been the prime causation agent."

It might, indeed, be argued that, if in ninety-nine cases out of a hundred the disease is shown to have been caused by a specific virus, it is more reasonable to assume that the evidence which appears to negative the intervention of such a virus in the hundredth case is delusive, than that the case is an exception. It is conceivable, however, that two groups of symptoms which resemble one another so closely as to be practically indistinguishable, may be produced by different causes, a point in connexion with which the reader may be commended to what the writer says regarding certain cases of ptomaine poisoning in pp. 22 and 23 of the pamphlet. That a particular special virus gives rise to a disease characterised by a certain group of symptoms, furnishes, of course, no conclusive reason why some other cause or causes, which may not even be specific, should not give rise to another disease characterised by a group of closely similar symptoms. The degree of improbability of such a coincidence would vary with the number and nature of the symptoms and their relation to one another.

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*On Germinal Selection as a Source of Definite Variation.* By AUGUST WEISMANN. Chicago : The Open Court Publishing Company, 1896.

THIS is a republication of a paper originally read by the author before the International Congress of Zoologists at Leyden, last year, with certain points which, for the sake of brevity, were omitted on that occasion, re-embodied in the text, and an appendix added on a number of allied topics.

The author's theory, which is based on that of a germ-plasm, made up of certain determinant groups of hereditary elements, or biophores, is nowhere very clearly set forth in the essay ; but, perhaps, it is most completely summed up in the statements that every hereditary change, however slight, of an organism, "rests on some alteration of a single definite particle of the germinal substance" \* \* \* "whose presence determines the appearance of a definite organ of a definite character in the course of normal evolution ;" that "the degree of adaptiveness which a part possesses itself evokes the direction of variation of that part ;" and that, though "personal selection

imparts the initial impulse to processes in the germ-plasm," they, "when once they are set agoing, persist of themselves, and are, therefore, in no need of the continued supplementary help of personal selection, *as directed* exclusively to a definite part.

If but from time to time, that is, if upon the average the poorest individuals, the bearers of the weakest determinants, are eliminated, the variational direction of the part in question, now reposing on germinal selection, must persist, and it will very slowly but very surely increase until further development is impeded by its inutility, and personal selection arrests the process, that is, ceases to eliminate the weaker individuals."

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## ACKNOWLEDGMENTS.

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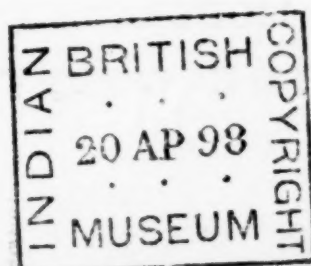
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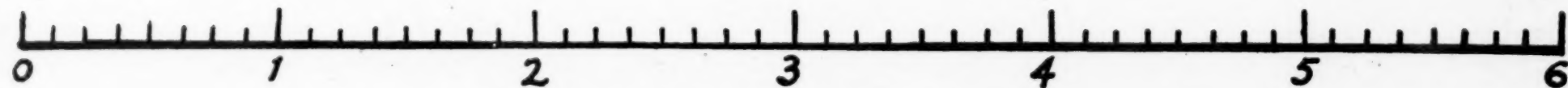
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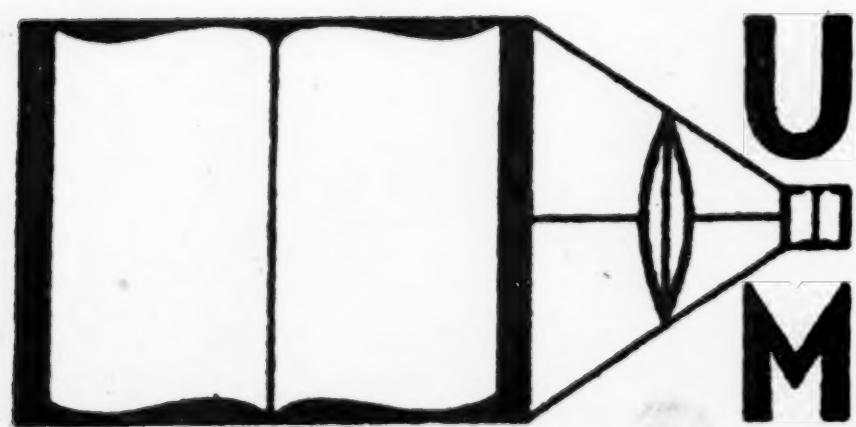
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